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AN ATLAS OF LOCAL GROUP GALAXIES

PAUL W. HODGE
BROOKE P. SKELTON
JOY ASHIZAWA



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by

PAUL W. HODGE

BROOKE P. SKELTON

and

JOY ASHIZAWA

*University of Washington,
Seattle, U.S.A.*

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DESCRIPTION OF THE ATLAS

INTRODUCTION

The Local Group of Galaxies is the small, loose cluster to which our Milky Way Galaxy belongs. It consists of approximately 36 known members, most of which are dwarf galaxies. This Atlas includes identification charts for 32 members for which identification atlases have not hitherto been published. There are numerous atlases of various sorts for the Milky Way Galaxy and there is a published atlas for M31 and its two close companions, M32 and NGC 205 (Hodge 1981). The Magellanic Clouds have also been covered by identification atlases (Hodge and Wright 1967 and 1977). This atlas, then, completes the set for the remaining members of the Local Group.

ORGANIZATION

The atlas is organized as follows: each Local Group member is presented by charts that include identifications of important known objects within them. For easy positional reference and for scale we have reproduced for each galaxy its image from the Digitized Sky Survey together with a grid of J2000 coordinates. Because of the large number of charts that are needed to cover all of M33, it is given first (Part I). The remaining galaxies are given in Part II in alphabetical order, starting with Andromeda I (abbreviated And I) and ending with the Wolf-Lundmark-Melotte galaxy (abbreviated WLM). Table 1 provides a complete listing of the charts. Each galaxy in Part II has a page that summarizes its basic data and gives some of its aliases, if any. A list of references follows. Except for M33, we have attempted to include all references to papers (up to early 1998) that deal with the galaxies of the Atlas.

As explained in the “Note added regarding publication” at the end of this text, a long delay has allowed us to add images of four objects that have been added to the Local Group list after the Atlas was originally submitted to be published. These galaxies are included at the end of the Atlas in Part III.

MEMBERSHIP

There is some uncertainty about Local Group membership for several galaxies. Either the needed facts are not yet available or certain criteria are not fulfilled. We have primarily followed van den Bergh’s (1994) selection, based on the velocity arguments used earlier by Yahil, Tammann and Sandage (1977). More generous criteria have been adopted by others, most notably by Mateo (1998), who included several interesting galaxies that are not included here. Mateo’s review is strongly recommended for its very thorough coverage, not only of possible members beyond those included here, but also for its extremely useful collection of uniform data for each galaxy; we have used many of his data for our summary pages.

Galaxies that Mateo describes but that are not included here are: DDO 210, GR8, IC 5152, Leo A, NGC 55, NGC 3109, UGC A86, and UKS 2323-326. Some of these have uncertain distances or unknown velocities and some we consider to be too distant to be included by us as members of the Local Group.

SOURCES

Our choices in selecting images to be used in this Atlas have been based on the appropriateness of the image for showing particular components of each galaxy, as well as on the ease with which the images could be made available to us and used. In the early years of this project, which dates back to the 1980's, we were generously helped by S. Tritton of the Royal Observatory, Edinburgh, who provided a splendid set of images taken by the U.K. Schmidt telescope. These have since been supplemented by images taken by us at various observatories and images obtained from others. The source in each case is listed in Table 1. All images are oriented with north at the top of the page and east to the left.

We note particular gratitude to W. Freedman, who granted permission to use her plates of M33 taken with the CFHT on Mauna Kea. However, we must warn users that these plates, used for Charts 3-19 and 21-32, were obtained with a Racine wedge in place, so that each bright star has a faint secondary image to its south-southeast.

ACKNOWLEDGMENTS

This Atlas was prepared with the help of many individuals and two funding sources. The National Science Foundation supported the preparation of the atlas of M33 (as well as the spin-off in the form of several scientific papers published elsewhere) under grant AST-9215821. The National Geographic Society helped financially with the preparation of the atlases of the other Local Group galaxies. The Royal Observatory, Edinburgh, generously supplied many photographs taken by the U.K. Schmidt telescope.

Many individuals also provided important materials, especially images, and other help. We are indebted to Taft Armandroff, Antonio Aparicio, William Blair, Ronald Canterna, Karen Fisher, Phillip Flower, Wendy Freedman, Jay Gallagher, S. M. Gordon, Rodrigo Ibata, Robert Kennicutt, Thomas Kinman, Robert Kirschner, M. G. Lee, Knox Long, Mario Mateo, James Nemec, Ata Sarajedini, Toby Smith, Sue Tritton, Alistair Walker, and Daniel Zucker. Many thanks to all of these and to the others who helped us along the way. We are especially grateful to our editors at Kluwer, most recently Dr. J. J. Blom, who have shown remarkable patience and have provided excellent help and advice.

Special Acknowledgment for Use of UK Schmidt images, the Digitized Sky Survey and Sky View Fields with southern declinations are based on photographic data obtained using the UK Schmidt Telescope. The UK Schmidt Telescope was operated by the Royal Observatory Edinburgh, with funding from the UK Science and Engineering Research Council, until 1988 June, and thereafter by the Anglo-Australian Observatory. Original plate material is copyright the Royal Observatory Edinburgh and the Anglo-Australian Observatory. The plates were processed into the present compressed digital form with their permission. The Digitized Sky Survey was produced at the Space Telescope Science Institute under US Government grant NAG W-2166.

Fields with northern declinations are based on photographic data obtained using the Oschin Schmidt Telescope on Palomar Mountain. The Palomar Observatory Sky Survey was funded by the National Geographic Society. The Oschin Schmidt Telescope is operated by the California Institute of Technology and Palomar Observatory. The plates were processed into the present compressed digital format with their permission. The Digitized Sky Survey was produced at the Space Telescope Science Institute under U.S. Government grant NAG W-2166.

SkyView was developed and is maintained under NASA ADP Grant NAS5-32068 with P.I. Thomas A. McGlynn under the auspices of the High Energy Astrophysics Science Archive Research Center (HEASARC) at the GSFC Laboratory for High Energy Astrophysics.

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REFERENCES

- Hodge, P. W. 1981, Atlas of the Andromeda Galaxy (U. Washington Press, Seattle)
- Hodge, P. W. and Wright, F. W. 1967, The Large Magellanic Cloud (Smithsonian Press, Washington)
- Hodge, P. W. and Wright, F. W. 1977, The Small Magellanic Cloud (U. Washington Press, Seattle)
- Mateo, M. L. 1998, "Dwarf Galaxies of the Local Group", ARAA, 36, 435
- Van den Bergh, S. 1994, "The Outer Fringes of the Local Group", AJ, 107, 1320
- Yahil, A., Tammann, G. and Sandage, A. R. 1977, "The Local Group: The Solar Motion Relative to its Centroid", ApJ, 217, 903

NOTE ADDED REGARDING PUBLICATION

Because of a series of computer failures, this Atlas has seen an unusual delay in publication. The Atlas was completed in July, 1998, and sent in paper form to the Publisher. When, several months later, we attempted to send the computer files for the charts, it was found that the computer used for the Atlas had failed and was irreparably damaged. We had backed up the files on another computer, however, so we turned to it. While we were reformatting the files from that computer preparatory to sending them to the Publisher, it crashed and the files were all lost. However, we still had versions of the charts on Bernoulli disks, made from the original computer when we were carrying out the identifications and marking the charts. However, by then we had no computers in the Department that could read Bernoulli disks, so they were sent out to be read. Unfortunately, it was found that the Bernoulli disks were damaged and could not be read. They were sent to the Publisher who was able to locate a company that offered to try to recapture the files on the damaged disks. Finally in December of 2000, the Publisher received the files from that company, which had been able to read all but one of the Bernoulli disks, the one exception being termed hopelessly damaged. By that time one of the authors had obtained her PhD and had left the University and another had completed her bachelors degree and had left both the University and astronomy. The third author therefore spent the next two months attempting to re-do the charts for the missing galaxies, eight in number, in spite of the fact that all of the original hardware, as well as all of the software, used for the original version of the charts, was no longer available.

This series of calamities delayed publication an unfortunate amount of time. However, during that time four galaxies were added to the list of Local Group members and we have taken the opportunity to include them in a special section at the back of the Atlas. The rest of the Atlas remains as it was originally submitted. Readers who wish to find more recent references to a galaxy are urged to consult one of the on-line sources of reference, such as the NASA Extragalactic Database.

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Table 4d. M33 Supernova Remnants

Table 5. IC 1613 Emission Regions

Table 6. NGC 6822 Emission regions

The Charts

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Table 1. The Charts

Chart	Galaxy	Objects Displayed	Telescope ^a	Filter ^b	Image Source ^c
1	M33	Coordinates	DSS	E	STScI
2	M33	Master chart, clusters	DSS	E	STScI
3	M33	Clusters and associations	CFHT	V	W. Freedman
4	M33	Clusters and associations	CFHT	V	W. Freedman
5	M33	Clusters and associations	CFHT	V	W. Freedman
6	M33	Clusters and associations	CFHT	V	W. Freedman
7	M33	Clusters and associations	CFHT	V	W. Freedman
8	M33	Clusters and associations	CFHT	V	W. Freedman
9	M33	Clusters and associations	CFHT	V	W. Freedman
10	M33	Clusters and associations	CFHT	V	W. Freedman
11	M33	Clusters and associations	CFHT	V	W. Freedman
12	M33	Clusters and associations	CFHT	V	W. Freedman
13	M33	Clusters and associations	CFHT	V	W. Freedman
14	M33	Clusters and associations	CFHT	V	W. Freedman
15	M33	Clusters and associations	CFHT	V	W. Freedman
16	M33	Clusters and associations	CFHT	V	W. Freedman
17	M33	Clusters and associations	CFHT	V	W. Freedman
18	M33	Clusters and associations	CFHT	V	W. Freedman
19	M33	Clusters and associations	CFHT	V	W. Freedman
20	M33	Master chart, variables	DSS	E	W. Freedman
21	M33	Variable stars	CFHT	B	W. Freedman
22	M33	Variable stars	CFHT	B	W. Freedman
23	M33	Variable stars	CFHT	B	W. Freedman
24	M33	Variable stars	CFHT	B	W. Freedman
25	M33	Variable stars	CFHT	B	W. Freedman
26	M33	Variable stars	CFHT	B	W. Freedman
27	M33	Variable stars	CFHT	B	W. Freedman
28	M33	Variable stars	CFHT	B	W. Freedman
29	M33	Variable stars	CFHT	B	W. Freedman
30	M33	Variable stars	CFHT	B	W. Freedman
31	M33	Variable stars	CFHT	B	W. Freedman
32	M33	Variable stars	CFHT	B	W. Freedman

33	M33	Master chart, emission regions	KPNO 4m	H	W. Freedman
34	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
35	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
36	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
37	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
38	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
39	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
40	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
41	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
42	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
43	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
44	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
45	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
46	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
47	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
48	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
49	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
50	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
51	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
52	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
53	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
54	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
55	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
56	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
57	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
58	M33	Emission regions	KPNO 4m	H	S. Gordon et al.
59	M33	HII region sub-components	KPNO 4m	H	T. Wyder
60	M33	HII region sub-components	KPNO 4m	H	T. Wyder
61	M33	HII region sub-components	KPNO 4m	H	T. Wyder
62	M33	HII region sub-components	KPNO 4m	H	T. Wyder
63	M33	HII region sub-components	KPNO 4m	H	T. Wyder
64	M33	HII region sub-components	KPNO 4m	H	T. Wyder
65	M33	HII region sub-components	KPNO 4m	H	T. Wyder
66	M33	HII region sub-components	KPNO 4m	H	T. Wyder
67	M33	HII region sub-components	KPNO 4m	H	T. Wyder

68	M33	HII region sub-components	KPNO 4m	H	T. Wyder
69	M33	HII region sub-components	KPNO 4m	H	T. Wyder
70	M33	HII region sub-components	KPNO 4m	H	T. Wyder
71	M33	HII region sub-components	KPNO 4m	H	T. Wyder
72	M33	HII region sub-components	KPNO 4m	H	T. Wyder
73	M33	HII region sub-components	KPNO 4m	H	T. Wyder
74	M33	HII region sub-components	KPNO 4m	H	T. Wyder
75	M33	HII region sub-components	KPNO 4m	H	T. Wyder
76	M33	HII region sub-components	KPNO 4m	H	T. Wyder
77	M33	HII region sub-components	KPNO 4m	H	T. Wyder
78	M33	HII region sub-components	KPNO 4m	H	T. Wyder
79	M33	HII region sub-components	KPNO 4m	H	T. Wyder
80	M33	HII region sub-components	KPNO 4m	H	T. Wyder
81	M33	HII region sub-components	KPNO 4m	H	T. Wyder
82	M33	HII region sub-components	KPNO 4m	H	T. Wyder
83	M33	HII region sub-components	KPNO 4m	H	T. Wyder
84	And I	Coordinates	DSS	E	STScI
85	And I	--	KPNO 4m	V	T. Kinman
86	And II	Coordinates	DSS	E	STScI
87	And II	--	KPNO 4m	V	T. Kinman
88	And III	Coordinates	DSS	E	STScI
89	And III	--	KPNO 4m	V	T. Kinman
90	Antlia	Coordinates	DSS	J	STScI
91	Antlia	--	CTIO 4m	V	A. Sarajedini
92	Carina	Coordinates	DSS	J	STScI
93	Carina	Carbon Stars	UKS	V	ROE
94	Draco	Coordinates	DSS	E	STScI
95	Draco	Variables, carbon stars	Pal. Schmidt	V	D. Malin
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122	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
123	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
124	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
125	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
126	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
127	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
128	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
129	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
130	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
131	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
132	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
133	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
134	IC 1613	Emission regions	KPNO 2.1m	H	P. Hodge
135	Leo I	Coordinates	DSS	E	STScI
136	Leo I	Carbon stars	UKS	V	ROE
137	Leo I	Variable stars (outer)	UKS	V	ROE

138	Leo I	Variable stars (core)	UKS	V	ROE
139	Leo II	Coordinates	DSS	E	STScI
140	Leo II	Carbon stars	UKS	V	ROE
141	LGS3	Coordinates	DSS	E	STScI
142	LGS 3	--	NOT	I	A. Aparicio
143	NGC 147	Coordinates	DSS	E	STScI
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147	NGC 6822	Coordinates	DSS	J	STScI
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185	Sextans I	Variables – West half	--	--	M. Mateo
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189	Sextans B	Coordinates	DSS	E	STScI
190	Sextans B	Variables, associations	KPNO 0.9m	R	P. Hodge
191	Sextans B	Emission regions	KPNO 0.9m	H	P. Hodge
192	Tucana	Coordinates	DSS	J	STScI
193	Tucana	Coordinates	CTIO 4m	I	A. Walker
194	UGC A92	Coordinates	DSS	E	STScI
195	UGC A92	Coordinates	KPNO 0.9m	H	B. Miller
196	UGC A92	Emission regions	KPNO 0.9m	H	B. Miller
197	Ursa Minor	Coordinates	DSS	E	STScI
198	Ursa Minor	Carbon stars	Lick 3m	V	P. Hodge
199	Ursa Minor	Variables	Palomar 1.5m	B	J. Nemec
200	Ursa Minor	Variables	Palomar 1.5m	B	J. Nemec
201	WLM	Coordinates	DSS	J	STScI
202	WLM	Variables, associations, globulars	UKS	V	ROE
203	WLM	Emission regions	KPNO 0.9m	H	B. Miller
204	And V		KPNO 4m	V	T. Armandroff
205	And VI		WIYN	Comp.	T. Armandroff

206	And VII		Keck II	V	E. Grebel
207	Cetus		INT	V	A. Whiting

Notes to table:

- ^aAPO Apache Point Observatory
 CFHT Canada France Hawaii Telescope
 CTIO Cerro Tololo Interamerican Observatory
 DSS Digitized Sky Survey
 KPNO Kitt Peak National Observatory
 NOT Nordic Optical Telescope
 UKS United Kingdom Schmidt Telescope
- ^bE Palomar Observatory Sky Survey red (103a-E) image
 J SERC yellow (103a-J) image
- ^cROE Royal Observatory Edinburgh
 STScI Space Telescope Science Institute

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Part I

The Atlas of M33

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Table 2a. M33 Stellar Associations^a

Association	Chart
1	11
2	11, 12
3	12
4	11,12
5	11, 12
6	12
7	12
8	12
9	12
10	12
11	12
12	12
13	12
14	12
15	12
16	12
17	12
18	12
19	12
20	12
21	12, 13
22	13
23	13
24	13
25	12, 13
26	13
27	13
28	9
29	9
30	9
31	9
32	9
33	9
34	9

35	9
36	8, 9
37	8
38	8
39	8
40	8
41	4
42	4
43	4
44	4
45	4
46	4
47	4, 8
48	12
49	12
50	12
51	12
52	12
53	12
54	12
55	12
56	12
57	12
58	12
59	12
60	12
61	9, 12
62	9
63	9
64	9, 12
65	9
66	9
67	9
68	8, 9
69	8, 9
70	8, 9
71	8

72	8
73	8
74	8
75	8
76	8
77	8
78	8
79	8
80	8
81	8
82	8
83	8
84	8
85	8
86	8
87	8
88	8
89	7
90	8, 11
91	8
92	8, 11
93	8, 11
94	8
95	11
96	11
97	11
98	11
99	11
100	11
101	11
102	11
103	11
104	11
105	11
106	11, 12
107	11,12,14,15
108	12, 15

109	14, 15
110	15
111	15
112	15
113	15
114	15
115	12, 15
116	15
117	15, 16
118	16
119	16
120	16
121	16
122	12,13,15,16
123	13, 16
124	13
125	13
126	13
127	12
128	12
129	12
130	13
131	13
132	13
133	13
134	10
135	9
136	9
137	9
138	5
139	5
140	5
141	5
142	12
143	12

^aAll identifications are from Humphreys and Sandage (1980).

Table 2b. M33 Star Clusters^a

Cluster	Other Name	Chart
MO 1	--	13
2	--	16
3	--	16
4	--	18
5	--	18
6	--	15
7	--	15
8	--	12
9 ^b	CS 37	15
10	--	12
11	CS 38	15
12	--	12
13	CS 36	15
14	--	12
15	--	12
	--	
16	--	12
17	--	9
18	--	5
19	--	12
20	CS 24	9
21	CS 1	5
22	CS 23	9
23	--	15
24	--	9
25	--	12
26	--	12
27	--	9
28	--	5
29	CS 35	11
30	--	0

31	CS 17	9
32	--	14
33	--	8
34	--	8
35	--	11
36	CS 33	11
37	--	8
38	--	11
39	--	8
40	--	8
41	--	11
42	--	11
43	--	14
44	--	8
45	--	8
46	--	11
47	--	11
48	--	11
49	CS 18	8
50	CS 16	8
51	CS 39	14
52	CS 13	8
54	CS 27	8
55	CS 20	8
56	--	8
58	--	3
CS 2	--	4
3	--	4
4	--	4
6	--	5
7	--	6
8	--	5
9	--	9
10	--	9
11	--	9
12	--	8

14	--	4
15	--	8
19	--	8
21	--	9
22	--	7
25	--	9
26	--	9
28	--	9
29	--	8
30	--	8
31	--	9
32	--	11
34	--	13

^aMO = Melnick and D'Odorico (1978); CS = Christian and Schommer (1982).

^bbackground galaxy

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Table 3. M33 Variable Stars^a

Variable	Other Name	Chart
KMW 377	--	23
402	--	21
486	--	21
502	--	23
546	--	21
594	--	21
641	--	21
1902	--	22
1264	--	22
1322	--	22
1439	--	24
1600	--	21
1737	--	21
2003	--	24
2022	--	21
2034	--	23
2085	--	21, 22
2101	--	22
2426	VHK 47	21
2481	--	21
2732	4439	24
2897	--	22
2929	--	23
3014	--	23
3017	--	24
3039	--	23
3090	--	24
3282	--	21
3482	VHK 50	21
3581	--	24
3618	--	23
3698	--	23

3894	--	21
3936	VHK 52	24
3955	--	24
4054	--	21
4072	--	23
4092	--	24
4189	--	21
4439	2732	24
4593	--	22
4698	--	24
4709	--	22
4799	--	24
5086	--	24
5205	--	24
5724	8663	24
5863	--	24
5866	8862	24
5900	--	24
6048	--	24
6071	--	24
6088	--	22
6231	--	24
6283	VHK 71	24
6365	--	22
6419	--	24
6436	VHK 75	24
6451	--	24
6508	VHK 81	24
6512	--	24
6628	--	24
6788	--	24
6834	--	24
6836	--	24
6884	--	24
6892	--	25

6924	--	24
6981	--	24
7008	--	24
7021	--	24
7022	--	22
7050	--	23
7065	--	24
7126	--	23
7341	--	24
7438	--	24
7460	--	24
7538	--	24
7548	--	22
7567	--	22
7585	--	24
7772	--	24
7908	--	24
8090	--	22
8323	--	24
8480	--	24
8521	--	24
8600	11739	24
8663	5724	24
8784	--	24
8811	VHK 65	24
8862	5866	24
8911	--	25
8979	--	24
9149	--	24
9169	--	27
9219	--	24
9310	--	24
9492	--	25
9495	--	24
9498	--	24

9686	--	24
9738	--	24
9780	--	24
9820	--	25
10025	--	24
10036	--	22
10077	--	24
10138	--	24
10169	VHK 26	24
10246	--	24
10256	H 28	24
10275	--	24
10395	--	24
10504	--	25
10801	--	27
10980	--	24
11172	--	25
11255	--	27
11290	--	24
11343	--	24
11444	--	24
11629	--	24
11721	H 36	24
11736	--	25
11739	8600	24
11853A	--	25
11853B	--	27
11988	--	24
11994	--	27
12104	--	25
12170	H 7	24
12191	--	25
12254	VHK 72	24
12300	--	27
12510	--	27

12788	16339	24
12865	--	25
12989	--	24
13013	--	24
13113	H 11	24
13148	--	24
13352	--	24
13363	--	25
13399	--	27
13587	--	25
13943	--	27
13953	--	27
14022	H 5	27
14098	--	27
14161	--	25
14261	--	27
14347	--	27
14364	--	25
14476	--	25
14523	--	25
14651	--	27
14783	--	27
14837	--	25
14890	H 3, VHK 3	25
14906	--	27
15043	H 34	25
15069	--	24
15151	--	25
15195	--	27
15383	--	27
15476	--	27
15687	--	25
15718	--	24
15772	--	27
15834	--	25

16046	--	25
16050	--	25
16071	--	25
16182	--	27
16280	--	25
16339	12788	24
16481	--	27
16606	--	25
16673	H 11	24
16692	--	27
16747	--	25
16876	--	25
16905	--	28
16942	--	25
17032	--	28
17068	--	27
17088	--	25
17163	--	27
17255	--	25
17502	--	25
17675	--	27
17869	--	27
18004	--	25
18095	21091	28
18180	--	27
18231	--	27
18443	--	28
18508	--	27
18561	--	28
18568	VHK 51	25
18569	--	27, 28
18675	H 16	28
18694	VHK 48	25
18714	--	27
18755	--	28

18797	H 17	28
18860	--	25
18901	--	25
18972	--	25
18892	--	28
19019	--	25
19247	22263	28
19237	--	28
19548	--	28
19721	--	28
19844	--	25
19860	--	27
20084	23190	28
20111	--	25
20311	--	27, 28
20385	--	25
20402	--	25
20415	--	25
20512	--	28
20522	--	28
20549	--	28
20597	--	25
20807	--	28
20822	--	28
20917	--	28
21091	18095	28
21158	--	28
21204	H 38	27
21253	--	26
21272	--	28
21308	--	30
21312	--	27
21314	--	27
21333	--	28
21516	--	26

21671	--	25
21736	--	28
21740	VHK 56	30
21765	--	28
21837	--	28
21979	--	28
22208	--	27
22263	19247	28
22289	--	28
22304	--	28
22312	H 39, VHK 79	28
22330	--	28
22359	H 29	28
22366	VHK 62	28
22526	--	28
22689	--	28
22861	--	28
22921	--	28
23020	H 31	28
23152	--	28
23162	H41	28
23173	HS C	28
23190	20084	28
23496	--	28
23551	--	28
23770	--	28
23835	H 44	28
23908	--	28
24113	--	28
24174	--	28
24180	--	30
24212	--	28
24289	--	28
24293	--	26
24355	--	28

24385	VHK 77?	--
24427	--	30
24472	28325	28
24501	--	28
24533	--	31
24599	--	28
24798	--	30
24838	SC G14	28
24858	H 33	28
24887	--	30
25017	--	28
25060	VHK 80	31
25061	--	31
25201	--	28
25255	--	28, 31
25615	--	26
25620	--	28
25933	--	31
25987	--	28
26066	--	30
26163	--	31
26166	H 35,VHK 35, SC E7	28
26175	--	28
26195	--	31
26212	--	28
26348	H 32	28
26414	--	31
26428	--	31
26477	--	30
26524	SC B1	26
26647	--	31
26729	--	28
26788	--	30
26850	--	31
26910	--	26

27065	--	31
27330	--	31
27544	--	28
27608	--	31
27639	--	30
27689	--	31
27697	--	28
27777	--	29
27830	--	28
27840	SC E34	26
28021	SC E17	26
28065	--	28
28168	VHK 58	28
28325	24472	28
28367	--	31
28500	--	26
28578	--	31
28632	--	31
28639	--	28
28664	--	28
28706	--	31
28768	--	28
28785	SC F12	29
28834	SC G14	28
28986	VHK 55	26
28988	--	31
29032	--	26
29104	--	31
29131	--	31
29211	--	31
29250	--	31
29280	--	29
29334	--	31
29397	--	28
29476	--	28

29618	--	28
29631	--	31
29799	--	28
29926	--	28
30001	--	31
30125	--	28
30133	--	28
30173	--	28
30352	--	31
30422	--	31
30459	--	31
30526	VHK 69	31
30718	--	31
30804	--	29
31100	--	31
31267	--	31
31396	--	28
31458	--	31
31668	VHK 57	31
31786	--	28
31805	--	28
31929	--	26
31953	SC G6	31
31986	--	28
32023	--	31
32117	--	28
32202	--	28
32473	SC F9	29
33070	SC F8	29
33350	--	26
34052	--	31
34497	--	31
35284	--	31
35369	--	31
36117	--	26

36568	--	31
36781	--	32
36806	--	32
36841	--	26
37040	--	26

^aThe variable stars are all based on the Kinman, Mould and Wood (1987) survey and are identified by the numbers in that catalog (designation: KMW), which also provided the alternate names given here (designation VHK: van den Bergh, Herbst, Kowal (1975); H: Hubble (1926); HS: Hubble and Sandage (1953); SC: Sandage and Carlson (1983)). We note that the fainter variables were often very difficult to identify with certainty and users should be aware of possible misidentifications.

Table 4a. M33 Emission Regions Identified by Boulesteix et al. (1974)

ID	Chart	RA (2000)	DEC (2000)	Flux ^a	Area ^b	Comments
BCLMP 1	50	1 34 1.8	30 35 49	160	157	
2	45	1 33 54.3	30 38 7	59	204	
3a	45,59	1 33 55.4	30 37 46	9.2	25	
3b	45,59	1 33 55.6	30 37 38	37	66	
4a	45,59	1 33 59.5	30 35 44	880	494	
4b	45,59	1 33 59.4	30 35 58	24	24	
4c	50,59	1 33 59.7	30 35 59	100	63	
4d	50,59	1 34 0.1	30 35 52	49	47	
4e	50,59	1 33 58.3	30 35 54	9.7	28	
5	50,51	1 33 58.7	30 35 27	440	315	
8Aa	50,59	1 33 58.7	30 33 56	43	101	
8Ab	50,59	1 33 59.3	30 33 53	74	84	Filament to SW is SNR G62 ^c
8Ac	50,59	1 33 60.0	30 33 52	340	277	SNR S17 is located near 8 A
8Ba	50,59	1 33 59.0	30 33 23	13	49	
8Bb	50,59	1 33 59.0	30 33 34	290	313	
8Bc	50,59	1 33 59.6	30 33 41	45	39	
8Bd	50,59	1 33 60.0	30 33 38	80	215	
9	45	1 33 51.8	30 38 48	100	242	
10a	50,51,59	1 33 53.7	30 35 42	27	95	
10b	50,51,59	1 33 54.0	30 35 29	200	304	
10c	50,51,59	1 33 55.1	30 35 22	61	121	
10d	50,51,59	1 33 53.4	30 35 18	120	226	
10e	50,51,59	1 33 53.8	30 35 11	21	105	
10f	50,51,59	1 33 54.6	30 35 6	27	105	
10g	50,51,59	1 33 53.4	30 35 7	7.2	37	
11a	50,51,59	1 33 55.5	30 34 23	120	257	
11b	50,51,59	1 33 55.9	30 34 18	160	245	
12	51	1 33 52.0	30 36 33	83	232	
13a	50,51,59	1 33 53.4	30 33 8	71	165	
13b	50,51,59	1 33 54.2	30 32 57	350	128	
13c	50,51,59	1 33 54.0	30 33 6	420	145	
13d	50,51,59	1 33 54.8	30 33 9	180	107	Also identified as SNR G55

13e	50,51,59	1 33 54.8	30 32 59	100	95	
14a	45,59	1 33 50.8	30 37 11	7.6	15	
14b	45,59	1 33 50.6	30 37 5	34	51	
15a	51,59	1 33 50.3	30 33 50	280	200	
15b	51,59	1 33 50.2	30 33 41	130	135	
15c	51,59	1 33 49.2	30 33 37	7.4	17	
15d	51,59	1 33 49.8	30 33 33	23	49	
15e	51,59	1 33 50.8	30 33 42	2.6	9	
16	45	1 33 49.8	30 37 30	300	246	
17a	51,60	1 33 47.1	30 33 1	110	153	
17b	51,60	1 33 47.4	30 32 48	160	195	
17c	51,60	1 33 47.9	30 32 51	47	63	Also identified as SNR G47
17d	51,60	1 33 47.7	30 33 3	590	277	
17e	51,60	1 33 48.2	30 33 13	11	19	
18	51	1 33 47.5	30 33 35	200	255	
19	51	1 33 46.6	30 33 33	280	278	
20a	45,60	1 33 49.2	30 38 0	37	74	
20b	45,60	1 33 50.1	30 37 56	120	323	
21a	51,60	1 33 45.2	30 32 36	92	234	
21b	51,60	1 33 45.4	30 32 20	180	33	
21c	51,60	1 33 45.4	30 32 27	130	420	
22	51	1 33 44.9	30 33 9	230	196	
23	51	1 33 42.7	30 33 28	110	147	
25	46,51	1 33 44.7	30 36 22	--	--	Contains SNR G46
26	46,51	1 33 44.6	30 35 57	160	164	
27a	46,51,60	1 33 45.4	30 36 45	140	64	
27b	46,51,60	1 33 45.7	30 36 50	130	123	
27c	46,51,60	1 33 45.8	30 37 0	26	70	
28	46,51	1 33 43.6	30 36 44	330	252	
29	45,46	1 33 47.6	30 38 37	940	657	
30a	45,46,60	1 33 40.3	30 37 22	120	137	
30b	45,46,60	1 33 41.0	30 37 13	69	120	
31	46,51	1 33 36.9	30 36 35	190	310	
32a	46,51,60	1 33 36.0	30 36 25	440	308	Also identified as SNR G35
32b	46,51,60	1 33 34.8	30 36 30	140	232	

33a	46,60	1 33 34.7	30 36 59	7.2	12	
33b	46,60	1 33 34.9	30 37 4	550	356	
34	46	1 33 32.9	30 36 52	30	51	
35a	46,60	1 33 38.5	30 38 4	180	280	
35b	46,60	1 33 39.2	30 38 7	260	199	
36	46	1 33 39.0	30 37 57	400	350	Area E of 36 is probably SNR S10
37	45,46	1 33 48.0	30 39 15	220	167	
38a	45,46,60	1 33 43.2	30 38 44	160	229	
38b	45,46,60	1 33 43.9	30 38 48	61	40	
38c	45,46,60	1 33 44.2	30 38 46	150	231	
38d	45,46,60	1 33 45.5	30 38 39	46	114	
39a	45,46,61	1 33 41.0	30 39 9	14	31	
39b	45,46,61	1 33 41.8	30 38 55	120	267	
39c	45,46,61	1 33 42.2	30 39 18	71	245	
39d	45,46,61	1 33 42.7	30 38 58	280	294	
40	45,46	1 33 43.6	30 39 5	820	567	
41	46	1 33 34.6	30 39 18	310	383	
42a	46,61	1 33 35.1	30 39 24	310	249	
42b	46,61	1 33 35.5	30 39 33	25	99	
43a	45,46,61	1 33 48.6	30 39 38	20	29	
43b	45,46,61	1 33 48.2	30 39 33	53	49	Also identified as SNR G48
43c	45,46,61	1 33 48.2	30 39 28	29	49	
44	45,46	1 33 42.0	30 39 37	58	131	
45	46,47	1 33 28.6	30 40 21	1400	877	
46	46,47	1 33 29.5	30 40 43	340	281	
47	45,46	1 33 49.0	30 39 50	430	233	
48	45,46	1 33 41.2	30 40 41	140	380	
49	40,41,46	1 33 33.6	30 41 32	--	--	NGC 595, contains SNR G32
50	46	1 33 39.7	30 41 2	71	142	
51	45,46	1 33 43.9	30 40 43	260	445	
52	45,46	1 33 43.3	30 40 55	120	105	
53	41,45,46	1 33 40.7	30 41 30	420	696	
54	40,41,46	1 33 35.6	30 42 27	350	656	
55a	40,41,46,61	1 33 36.4	30 42 55	160	399	

55b	40,41,46,61	1 33 35.7	30 42 43	63	229	
56a	45,46,61	1 33 40.7	30 41 30	380	589	
56b	45,46,61	1 33 39.1	30 41 34	36	94	
57	40,41	1 33 36.4	30 43 18	89	159	
58	40,41	1 33 39.2	30 42 58	75	230	
59	40,41,45,46	1 33 40.4	30 42 49	240	349	
60	40,45,46	1 33 45.8	30 42 43	300	566	
61	40	1 33 42.5	30 44 36	530	329	
62a	40,61	1 33 44.6	30 44 47	620	557	
62b	40,61	1 33 43.8	30 44 35	190	142	
62c	40,61	1 33 44.2	30 44 36	820	266	
62d	40,61	1 33 43.5	30 44 22	30	79	
62e	40,61	1 33 43.9	30 44 13	22	80	
62f	40,61	1 33 45.2	30 44 27	32	50	
62g	40,61	1 33 44.9	30 44 14	9.8	48	
63	40,45	1 33 47.6	30 43 47	680	1074	
64a	45,61	1 33 50.1	30 41 34	61	121	
64b	45,61	1 33 49.9	30 41 19	120	203	
64c	45,61	1 33 50.3	30 41 21	65	156	
64d	45,61	1 33 50.1	30 41 15	84	73	
65a	40,45,61	1 33 51.7	30 43 50	51	107	
65b	40,45,61	1 33 52.5	30 43 46	380	360	
66a	45,61	1 33 51.3	30 40 50	450	434	
66b	45,61	1 33 50.5	30 40 40	43	111	
66c	45,61	1 33 51.0	30 40 36	26	86	
69	45	1 33 50.9	30 39 46	210	158	
70	45	1 33 51.1	30 40 17	62	96	
71a	45,62	1 33 52.5	30 40 24	15	22	
71b	45,62	1 33 52.0	30 40 19	56	103	
72	39,40,45	1 34 1.0	30 43 51	310	176	
73	40,45	1 33 57.4	30 42 11	610	309	
74a	40,45,62	1 33 57.9	30 42 27	150	186	
74b	40,45,62	1 33 57.8	30 42 18	120	106	
75	45	1 33 56.0	30 41 12	79	112	
76a	45,62	1 33 56.4	30 40 58	110	94	

76b	45,62	1 33 56.0	30 40 56	9.2	26	
77a	44,45,62	1 34 7.7	30 41 41	95	184	
77b	44,45,62	1 34 6.5	30 41 24	17	66	
77c	44,45,62	1 34 5.9	30 41 42	1300	950	
78	44,45	1 34 10.7	30 42 32	42	157	
79a	45,62	1 33 59.7	30 40 47	200	166	
79b	45,62	1 34 0.1	30 40 43	180	98	
79c	45,62	1 34 0.4	30 40 50	77	97	
80	45	1 34 0.8	30 40 22	71	207	
81	45	1 34 1.3	30 39 59	390	505	
83	44,45	1 34 9.7	30 39 7	410	442	
84	45	1 33 56.8	30 39 17	26	72	
85a	44,45,62	1 34 6.8	30 39 22	12	16	
85b	44,45,62	1 34 7.4	30 39 24	250	346	
86	45	1 33 55.8	30 39 0	58	159	
87a	45,62	1 34 1.8	30 38 13	75	99	
87b	45,62	1 34 1.7	30 38 20	150	96	
87c	45,62	1 34 2.3	30 38 19	110	104	
87d	45,62	1 34 2.0	30 38 26	110	71	
87e	45,62	1 34 0.9	30 38 45	46	256	
87f	45,62	1 34 1.8	30 38 38	160	73	
87g	45,62	1 34 2.5	30 38 36	1200	457	
87h	45,62	1 34 3.3	30 38 42	130	131	
87i	45,62	1 34 3.3	30 39 0	110	110	
87j	45,62	1 34 2.6	30 38 58	36	40	
87k	45,62	1 34 2.2	30 39 6	50	121	
87l	45,62	1 34 2.6	30 39 9	21	85	
88a	44,50,62	1 34 17.2	30 37 13	140	295	
88b	44,50,62	1 34 16.4	30 37 12	700	274	
88c	44,50,62	1 34 15.1	30 37 22	100	93	
88d	44,50,62	1 34 16.0	30 37 6	330	184	
88e	44,50,62	1 34 15.5	30 37 9	1300	624	
88f	44,50,62	1 34 13.7	30 37 8	25	111	
89Aa	45,62	1 34 1.2	30 38 1	47	115	
89Ab	45,62	1 34 1.2	30 38 7	29	64	

89Ac	45,62	1 34 0.8	30 38 18	29	58	
89Ad	45,62	1 34 0.4	30 38 21	66	148	
89Ba	45,63	1 34 1.8	30 37 29	21	40	
89Bb	45,63	1 34 2.2	30 37 36	46	119	
89Bc	45,63	1 34 2.5	30 37 40	79	203	
89Bd	45,63	1 34 2.8	30 37 39	12	12	
90	44,45	1 34 4.1	30 38 7	94	103	
91	44,45	1 34 6.5	30 37 47	120	214	
92	45	1 33 55.2	30 38 56	--	--	
93a	45,63	1 33 52.5	30 39 7	420	478	
93b	45,63	1 33 52.7	30 39 14	260	71	
93c	45,63	1 33 52.3	30 39 20	540	116	
93d	45,63	1 33 52.2	30 39 28	160	151	
93e	45,63	1 33 52.8	30 39 23	110	76	
94	45	1 34 0.2	30 38 10	--	--	
95a	50,63	1 34 10.9	30 36 13	420	334	
95b	50,63	1 34 10.6	30 36 25	52	87	
95c	50,63	1 34 11.3	30 36 25	36	69	
95d	50,63	1 34 12.1	30 36 12	12	40	
95e	50,63	1 34 10.2	30 36 23	1.4	5	
95Aa	50,63	1 34 10.7	30 35 53	16	32	
95Ab	50,63	1 34 11.2	30 35 46	120	103	
96	45	1 33 56.6	30 38 19	130	399	
97a	45,63	1 34 1.7	30 37 18	84	108	
97b	45,63	1 34 1.6	30 37 22	75	147	
99a	45,63	1 33 53.9	30 38 37	18	51	
99b	45,63	1 33 53.2	30 38 49	1000	585	
100a	50,63	1 34 2.6	30 36 32	47	91	
100b	50,63	1 34 3.2	30 36 33	62	124	
100c	50,63	1 34 1.7	30 36 30	650	456	
100d	50,63	1 33 59.4	30 36 19	140	444	
100e	50,63	1 34 1.9	30 36 8	800	893	
200	51	1 33 39.4	30 32 36	560	439	
201	51	1 33 40.9	30 32 6	220	469	
202	51	1 33 39.2	30 32 6	130	134	

203	51	1 33 37.6	30 31 58	56	93	
204	51	1 33 39.1	30 31 32	--	--	
206	51	1 33 37.7	30 30 7	100	205	Also identified as SNR S9
207a	51,56,63	1 33 35.1	30 29 53	21	57	
207b	51,56,63	1 33 35.1	30 29 50	37	79	
208a	51,63	1 33 33.1	30 32 17	5.5	12	
208b	51,63	1 33 32.5	30 32 12	9.7	28	
208c	51,63	1 33 32.7	30 32 6	23	49	
208d	51,63	1 33 33.2	30 32 11	150	83	
208e	51,63	1 33 33.2	30 32 1	290	255	
208f	51,63	1 33 33.8	30 32 13	11	19	
208g	51,63	1 33 33.8	30 32 8	52	26	
208h	51,63	1 33 34.2	30 32 8	390	131	
208i	51,63	1 33 34.9	30 32 10	100	91	
208j	51,63	1 33 34.5	30 31 58	59	92	
209a	51,64	1 33 31.9	30 33 52	19	78	
209b	51,64	1 33 33.3	30 33 43	81	263	
209c	51,64	1 33 33.3	30 33 36	130	229	
209d	51,64	1 33 33.2	30 33 30	19	44	
209e	51,64	1 33 33.6	30 33 23	21	56	
210	51,52	1 33 31.2	30 33 31	190	124	Also identified as SNR G31
211a	51,52,64	1 33 30.6	30 32 1	130	119	
211b	51,52,64	1 33 30.1	30 32 4	44	61	
211c	51,52,64	1 33 29.9	30 31 58	32	44	
212a	51,52,64	1 33 29.1	30 31 51	30	35	
212b	51,52,64	1 33 29.1	30 31 54	57	52	
212c	51,52,64	1 33 29.3	30 31 54	27	27	
213a	51,52,64	1 33 29.5	30 31 59	14	35	
213b	51,52,64	1 33 29.7	30 31 54	280	259	
213c	51,52,64	1 33 28.1	30 31 48	72	59	
213d	51,52,64	1 33 28.1	30 31 40	56	89	
214a	51,52,64	1 33 29.6	30 31 50	47	20	
214b	51,52,64	1 33 30.1	30 31 46	890	278	
215	52	1 33 14.6	30 32 26	280	287	
216	52	1 33 11.0	30 29 57	--	--	

217a	52,64	1 33 9.3	30 29 49	710	583	
217b	52,64	1 33 7.9	30 29 43	410	549	
218	52,53	1 33 0.5	30 30 43	2400	2648	Contains SNRs G10, G12, G13
220	52	1 33 11.0	30 27 42	550	481	
221	52	1 33 9.9	30 27 21	600	700	
222	57	1 33 24.5	30 25 33	--	--	IC 135
223	52	1 33 24.5	30 30 53	--	--	
224a	52,64	1 33 20.5	30 32 0	82	190	
224b	52,64	1 33 21.1	30 32 4	49	148	
225	52	1 33 21.1	30 31 25	60	166	Also identified as SNR G23
226	52	1 33 12.0	30 30 26	170	315	
227	52	1 33 11.5	30 30 16	--	--	
229	47	1 33 1.8	30 34 48	--	--	
230a	47,48,64	1 33 0.8	30 34 18	170	252	
230b	47,48,64	1 33 1.1	30 34 8	120	187	
231	47,48	1 32 59.6	30 34 43	170	246	
232a	48,64	1 32 57.8	30 34 40	79	118	
232b	48,64	1 32 58.0	30 34 49	27	53	
233a	47,48,65	1 32 57.3	30 35 43	16	42	
233b	47,48,65	1 32 56.5	30 35 46	76	209	
233c	47,48,65	1 32 57.2	30 35 55	370	771	
234a	48,65	1 32 55.7	30 35 34	67	167	
234b	48,65	1 32 56.6	30 35 36	58	108	
234c	48,65	1 32 56.8	30 35 29	22	72	
235	48	1 32 55.1	30 35 46	100	259	
236a	48,65	1 32 51.7	30 35 55	71	213	
236b	48,65	1 32 52.4	30 35 47	94	283	
237	48	1 32 52.5	30 34 58	370	426	
238	48	1 32 44.7	30 34 58	270	317	
239	53	1 32 57.0	30 32 51	100	115	
240a	53,65	1 32 56.1	30 32 22	130	166	
240b	53,65	1 32 56.1	30 32 28	140	144	
241	53	1 32 57.5	30 31 59	190	295	
243	53	1 32 56.5	30 27 17	220	495	
245a	52,57,65	1 33 18.5	30 26 45	96	282	

245b	52,57,65	1 33 20.9	30 27 8	4.0	16	
255a	57,65	1 33 10.0	30 23 5	590	652	
255b	57,65	1 33 11.0	30 23 3	150	202	
256a	57,65	1 33 11.8	30 23 18	800	751	
256b	57,65	1 33 11.7	30 23 33	370	443	
256c	57,65	1 33 13.3	30 23 29	30	103	
257	57	1 33 9.6	30 23 24	190	194	
258a	57,65	1 33 7.1	30 23 31	58	132	
258b	57,65	1 33 6.0	30 23 26	230	340	
259a	57,65	1 33 7.3	30 23 14	60	83	
259b	57,65	1 33 7.3	30 22 57	220	333	
259c	57,65	1 33 8.1	30 23 4	40	124	
261a	58,66	1 32 53.6	30 23 21	68	156	
261b	58,66	1 32 54.6	30 23 19	280	389	
262a	58,66	1 32 45.7	30 20 16	92	207	
262b	58,66	1 32 46.2	30 20 28	95	290	
263a	58,66	1 32 43.6	30 21 7	20	92	
263b	58,66	1 32 43.2	30 21 0	56	219	
263c	58, 66	1 32 42.4	30 20 54	58	208	
263d	58,66	1 32 42.1	30 20 37	2.7	12	Ring surrounding 263d is SNR G3
263e	58,66	1 32 40.9	30 20 43	8.1	35	
264	58	1 32 41.0	30 22 26	210	385	
265a	58,66	1 32 41.7	30 24 5	87	135	
265b	58,66	1 32 41.9	30 24 13	67	152	
265c	58,66	1 32 43.6	30 24 6	180	427	
265d	58,66	1 32 44.5	30 23 42	4.7	19	
266	58	1 32 40.7	30 24 23	270	497	
268	58	1 32 43.4	30 24 36	390	1249	
269	58	1 32 41.9	30 25 12	470	935	
270	58	1 32 46.5	30 25 3	160	301	
272	53	1 32 34.7	30 27 45	520	606	
273a	53,66	1 32 35.3	30 30 27	280	362	
273b	53,66	1 32 34.1	30 30 43	77	207	
274a	48,66	1 32 31.6	30 35 24	290	338	North part of 274 is SNR G2

274b	48,66	1 32 31.8	30 35 16	340	254	
274c	48,66	1 32 32.5	30 35 18	260	194	
274d	48,66	1 32 30.6	30 35 10	590	1668	
275a	48,66	1 32 29.7	30 36 7	80	187	
275b	48,66	1 32 29.3	30 36 18	24	64	
275c	48,66	1 32 29.9	30 36 25	4.9	17	
277	47	1 33 11.4	30 38 50	1100	760	NGC 592
278a	46,47,66	1 33 18.7	30 39 34	27	103	
278b	46,47,66	1 33 18.7	30 39 25	31	95	
278c	46,47,66	1 33 19.3	30 39 24	20	76	
279a	48,66	1 32 55.1	30 39 28	23	69	
279b	48,66	1 32 55.3	30 39 26	21	58	
279c	48,66	1 32 56.1	30 39 27	21	111	
280	48	1 32 45.5	30 39 4	--	--	NGC 588
283	48	1 32 56.7	30 40 38	120	556	Also identified as SNR G8
284	47	1 33 3.5	30 39 49	96	144	Also identified as SNR G15
285	42	1 33 2.7	30 41 4	92	67	
286	41,42	1 33 14.4	30 41 28	140	212	Also identified as SNR S2
287a	41,46,67	1 33 17.8	30 41 17	17	15	
287b	41,46,67	1 33 18.1	30 41 17	20	26	
287c	41,46,67	1 33 17.9	30 41 10	72	119	
288a	42,67	1 33 6.9	30 42 29	470	824	North part is SNR G16
288b	42,67	1 33 9.0	30 42 53	74	346	
289	42	1 32 58.3	30 44 25	72	172	
301a	39,40,67	1 33 55.0	30 45 38	140	230	IC 142
301b	39,40,67	1 33 54.9	30 45 33	64	93	IC 142
301c	39,40,67	1 33 55.6	30 45 17	710	471	IC 142
301d	39,40,67	1 33 55.1	30 45 17	940	241	IC 142
301e	39,40,67	1 33 54.1	30 45 15	140	227	IC 142, also identified as SNR G54
301f	39,40,67	1 33 55.6	30 45 8	43	38	IC 142
301g	39,40,67	1 33 54.8	30 45 4	49	129	IC 142
301h	39,40,67	1 33 53.3	30 45 16	120	455	IC 142
302	39	1 34 6.8	30 47 33	--	--	
601	41,42	1 33 14.1	30 45 53	180	374	
602a	41,42,67	1 33 16.8	30 45 52	38	57	

602b	41,42,67	1 33 16.5	30 45 58	120	499		
603a	41,42,67	1 33 16.4	30 46 46	67	94		
603b	41,42,67	1 33 15.9	30 46 44	58	110		
603c	41,42,67	1 33 16.5	30 46 36	53	132		
603d	41,42,67	1 33 15.0	30 46 48	3.2	18		
604a	41,42,67	1 33 16.1	30 47 5	74	111		
604b	41,42,67	1 33 16.4	30 47 8	21	103		
606	37,41	1 33 19.7	30 47 40	200	731		
607a	41,67	1 33 21.1	30 47 34	33	146		
607b	41,67	1 33 21.5	30 47 39	86	278		
607c	41,67	1 33 22.5	30 47 50	8.4	40		
608a	41,67	1 33 25.2	30 47 24	95	402		
608b	41,67	1 33 26.2	30 47 32	33	143	Area just NE is SNR G26	
608c	41,67	1 33 25.8	30 48 1	4.2	22		
609a	41,67	1 33 28.2	30 47 39	100	273		
609b	41,67	1 33 27.6	30 47 33	30	80		
609c	41,67	1 33 27.2	30 47 38	15	41		
609d	41,67	1 33 27.3	30 47 42	9.1	24		
609e	41,67	1 33 27.1	30 47 49	2.2	14		
609f	41,67	1 33 27.5	30 47 41	14	30		
609g	41,67	1 33 29.9	30 47 41	120	578	Also identified as SNR G30	
610	40,41	1 33 33.4	30 47 2	180	387		
611a	40,41,68	1 33 33.4	30 47 38	59	268		
611b	40,41,68	1 33 34.6	30 47 35	5.1	36		
612a	40,41,68	1 33 40.4	30 45 38	110	225		
612b	40,41,68	1 33 40.3	30 45 51	150	134		
612c	40,41,68	1 33 40.2	30 45 56	26	43		
612d	40,41,68	1 33 39.8	30 45 53	39	71		
612e	40,41,68	1 33 39.4	30 45 57	31	95		
613	40	1 33 41.6	30 47 31	64	77		
614	36,40	1 33 43.9	30 48 29	5.7	24		
615a	36,40,68	1 33 36.1	30 48 24	28	107		
615b	36,40,68	1 33 36.2	30 48 36	7.2	29		
615c	36,40,68	1 33 36.1	30 48 31	6.7	29		
615d	36,40,68	1 33 36.7	30 48 28	15	56		

615e	36,40,68	1 33 36.7	30 48 21	5.0	25		
615f	36,40,68	1 33 36.9	30 48 29	4.7	27		
615g	36,40,68	1 33 37.5	30 48 21	10	68		
615h	36,40,68	1 33 34.5	30 48 42	42	259		
616	37	1 32 54.3	30 50 25	84	224		
618a	37,68	1 33 12.9	30 50 27	130	101		
618b	37,68	1 33 13.6	30 50 28	15	35		
618c	37,68	1 33 13.6	30 50 23	6.6	39		
619	37	1 33 14.2	30 51 4	13	23		
620	37	1 33 14.4	30 51 32	110	66		
621	37	1 33 13.3	30 52 5	47	207		
622	37	1 33 15.2	30 52 7	22	38		
623a	37,68	1 33 15.1	30 52 37	83	185	IC 133	
623b	37,68	1 33 16.1	30 52 42	900	436	IC 133	
623c	37,68	1 33 15.8	30 52 52	200	332	IC 133	
623d	37,68	1 33 16.6	30 52 54	110	334	IC 133	
624	37	1 33 14.5	30 53 15	470	586	IC 133	
625	37	1 33 14.5	30 53 34	300	690	IC 133	
626	37	1 33 16.2	30 53 59	470	617	IC 133	
627	36	1 33 24.0	30 50 22	32	138		
628	36	1 33 34.3	30 50 3	86	140		
629	36	1 33 36.1	30 50 31	360	238		
630	36	1 33 36.4	30 50 52	690	2040		
631a	36,68	1 33 47.1	30 50 53	44	87		
631b	36,68	1 33 47.8	30 50 49	300	435		
631c	36,68	1 33 47.6	30 50 38	9.9	8		
632a	36,68	1 33 49.5	30 51 36	350	827		
632b	36,68	1 33 48.7	30 51 49	100	355		
633a	36,68	1 33 46.0	30 52 9	43	19		
633b	36,68	1 33 46.0	30 52 7	15	13		
634	36	1 33 41.6	30 52 37	--	--	Contains SNR G40	
635a	36,68	1 33 42.9	30 53 9	43	225		
635b	36,68	1 33 42.2	30 53 6	20	111		
636	36	1 33 47.3	30 54 2	--	--		
651a	34,69	1 34 29.0	30 57 0	85	370		

651b	34,69	1 34 29.1	30 57 22	96	152		
651c	34,69	1 34 29.5	30 57 9	460	315		
651d	34,69	1 34 30.3	30 57 13	200	349		
652a	34,69	1 34 33.0	30 56 38	12	61		
652b	34,69	1 34 32.5	30 56 33	25	142		
652c	34,69	1 34 31.3	30 56 48	13	68		
652d	34,69	1 34 31.1	30 56 44	8.9	50		
652e	34,69	1 34 30.5	30 56 35	4.2	24		
653a	34,69	1 34 38.6	30 56 12	94	241		
653b	34,69	1 34 38.2	30 56 10	34	83		
654	34	1 34 40.2	30 56 3	26	132		
655a	34,69	1 34 42.6	30 55 46	4.5	10		
655b	34,69	1 34 42.5	30 55 42	21	28		
655c	34,69	1 34 41.9	30 55 34	7.0	45		
655d	34,69	1 34 42.7	30 55 31	4.7	22		
656	34	1 34 46.1	30 55 17	49	214		
657	34	1 34 49.5	30 54 55	--	--		
659	34,35	1 34 23.8	30 57 1	150	224		
660a	35,83	1 34 15.6	30 54 55	58	343	See note d	
660b	35,83	1 34 15.3	30 55 7	2.4	14	See note d	
660c	35,83	1 34 16.1	30 56 1	4.8	21	See note d	
661	35	1 34 21.4	30 54 20	59	66		
662	34,35	1 34 24.4	30 54 48	170	323		
663a	34,69	1 34 29.7	30 53 8	51	240		
663b	34,69	1 34 27.8	30 53 44	24	168		
663c	34,69	1 34 26.8	30 53 56	13	97		
663d	34,69	1 34 25.5	30 53 32	19	133		
664a	34,69	1 34 28.1	30 52 43	180	879		
664b	34,69	1 34 27.0	30 52 52	85	476		
664c	34,69	1 34 25.9	30 53 5	21	103		
664d	34,69	1 34 25.4	30 52 44	37	248		
664e	34,69	1 34 26.3	30 52 38	36	192		
665a	35,69	1 34 14.7	30 53 12	93	543		
665b	35,69	1 34 15.5	30 53 4	76	275		

666a	35,69	1 34 16.6	30 52 23	23	94	BCLMP 666 contains SNR G84
666b	35,69	1 34 17.0	30 52 34	42	172	
666c	35,69	1 34 16.3	30 52 41	92	375	
666d	35,69	1 34 14.8	30 52 36	71	289	
667a	35,69	1 34 13.7	30 52 30	86	184	BCLMP 667 contains SNR DDB12
667b	35,69	1 34 13.9	30 52 19	75	117	
667c	35,69	1 34 12.8	30 52 8	94	282	
667d	35,69	1 34 13.3	30 52 16	78	178	
667e	35,69	1 34 12.0	30 52 19	160	451	
668a	35,70	1 34 3.9	30 54 56	280	331	
668b	35,70	1 34 3.3	30 54 43	24	78	
669	35	1 34 58.8	30 355 28	39	61	
670	35	1 34 3.4	30 53 5	10	32	
671a	35,70	1 34 7.0	30 51 41	55	115	
671b	35,70	1 34 6.3	30 51 38	290	77	
672a	35,70	1 34 4.2	30 51 25	27	115	
672b	35,70	1 34 2.6	30 51 21	460	659	
673	35	1 34 1.0	30 51 8	61	153	
674	35	1 33 58.2	30 51 6	45	220	
675	39	1 34 2.2	30 50 24	55	80	
676	38	1 34 32.0	30 49 0	130	344	
677	38	1 34 40.4	30 48 13	130	367	
678	38	1 34 41.2	30 47 3	70	157	
679a	38,70	1 34 37.2	30 47 12	57	38	
679b	38,70	1 34 36.9	30 47 10	30	25	
680	38	1 34 32.8	30 47 6	--	--	NGC 604, contains SNR G94
681	38	1 34 36.5	30 46 39	--	--	
682a	39,70	1 34 23.3	30 46 52	34	108	
682b	39,70	1 34 23.3	30 46 46	27	90	
682c	39,70	1 34 22.9	30 46 52	79	265	
683a	39,70	1 34 23.3	30 48 48	49	111	
683b	39,70	1 34 23.3	30 48 39	36	175	
684a	39,70	1 34 22.1	30 48 41	22	24	

684b	39,70	1 34 21.7	30 48 38	250	353	
684c	39,70	1 34 19.9	30 48 23	100	244	
685a	39,70	1 34 20.2	30 49 3	180	219	
685b	39,70	1 34 19.8	30 48 49	240	436	
685c	39,70	1 34 19.8	30 48 56	18	15	
686	39	1 34 17.8	30 48 37	160	242	
687a	39,70	1 34 14.1	30 48 14	75	278	Also identified as SNR G77
687b	39,70	1 34 14.0	30 48 22	39	103	
687c	39,70	1 34 13.8	30 48 29	130	183	Also identified as SNR G75
687d	39,70	1 34 13.0	30 48 33	34	110	
687e	39,70	1 34 12.4	30 48 38	15	101	
688	39	1 34 11.1	30 46 39	--	--	
689	39	1 34 8.3	30 46 46	--	--	
690	39	1 34 6.9	30 47 1	35	135	
691a	35,71	1 34 17.6	30 52 16	130	480	
691b	35,71	1 34 17.2	30 51 53	240	219	
691c	35,71	1 34 16.6	30 52 2	42	51	
691d	35,71	1 34 16.4	30 51 49	1200	438	
691e	35,71	1 34 16.9	30 51 47	270	469	Also identified as SNR G83
692a	39,40,71	1 34 3.5	30 48 7	18	45	
692b	39,40,71	1 34 3.6	30 47 53	92	237	
693	39,40	1 34 4.1	30 46 53	240	341	
694	40	1 33 51.8	30 47 12	60	80	
695	39,40	1 33 58.8	30 49 7	90	112	
696	39,40	1 33 57.8	30 48 37	38	182	
697	40	1 33 52.2	30 46 26	64	86	
698	39,40	1 34 1.6	30 44 55	95	82	
699	39,40	1 34 0.4	30 44 34	24	68	
702a	50,71	1 34 10.1	30 31 55	83	108	
702b	50,71	1 34 10.1	30 32 3	7.9	18	
702c	50,71	1 34 9.8	30 32 1	6.5	12	
702d	50,71	1 34 9.6	30 31 55	69	274	
702e	50,71	1 34 10.7	30 32 1	3.3	18	
703	50	1 33 59.8	30 32 41	160	84	
704a	50,51,71	1 33 55.3	30 32 3	54	244	

704b	50,51,71	1 33 57.9	30 32 8	81	182	Also identified as SNR G59
704c	50,51,71	1 33 57.8	30 32 16	18	39	
704d	50,51,71	1 33 57.5	30 32 21	11	31	
704e	50,51,71	1 33 57.8	30 32 23	34	157	
704f	50,51,71	1 33 58.3	30 32 21	25	44	
704g	50,51,71	1 33 58.8	30 32 22	42	170	
705	49	1 34 40.3	30 31 18	110	95	
706	49	1 34 42.2	30 31 40	210	237	
707a	50,51,71	1 33 55.5	30 33 38	81	267	
707b	50,51,71	1 33 55.6	30 33 47	110	192	
707c	50,51,71	1 33 55.7	30 33 56	220	359	
708	50	1 34 8.2	30 34 2	160	195	
709a	50,71	1 34 8.7	30 34 26	7.4	38	
709b	50,71	1 34 9.3	30 34 25	45	115	
709c	50,71	1 34 9.8	30 34 38	63	254	
709d	50,71	1 34 10.4	30 34 51	24	78	
709e	50,71	1 34 11.5	30 34 50	19	78	
709f	50,71	1 34 10.6	30 34 43	12	32	
709g	50,71	1 34 10.9	30 34 47	14	30	
709h	50,71	1 34 11.4	30 34 42	34	82	
709i	50,71	1 34 11.0	30 34 35	55	109	
709j	50,71	1 34 12.5	30 34 43	24	108	
709k	50,71	1 34 11.2	30 34 28	30	52	
709l	50,71	1 34 11.2	30 34 20	61	89	
709m	50,71	1 34 11.7	30 34 20	24	76	
709n	50,71	1 34 10.8	30 34 24	77	252	
709o	50,71	1 34 10.3	30 34 9	12	53	
710	50	1 34 13.8	30 33 42	710	373	
711a	50,71	1 34 17.3	30 33 41	490	350	
711b	50,71	1 34 17.3	30 33 56	110	250	
711c	50,71	1 34 16.2	30 34 6	67	248	
711d	50,71	1 34 16.4	30 33 50	48	65	
711e	50,71	1 34 16.4	30 33 38	58	104	
711f	50,71	1 34 15.7	30 33 56	51	64	
711g	50,71	1 34 14.6	30 33 44	210	254	

711h	50,71	1 34 14.7	30 33 56	87	218	
712a	50,71	1 34 19.5	30 33 43	270	379	Also identified as SNR G86
712b	50,71	1 34 18.6	30 33 55	34	113	
712c	50,71	1 34 20.1	30 33 35	14	66	
713	50	1 34 18.7	30 34 28	260	410	
714a	50,71	1 34 16.0	30 35 5	39	122	
714b	50,71	1 34 16.4	30 34 56	18	53	
714c	50,71	1 34 16.7	30 34 49	31	105	
714d	50,71	1 34 15.5	30 35 17	14	78	
714e	50,71	1 34 14.8	30 35 9	12	28	
714f	50,71	1 34 15.1	30 35 2	41	94	
714g	50,71	1 34 13.7	30 34 47	180	130	
714h	50,71	1 34 13.8	30 34 38	36	87	
714i	50,71	1 34 14.3	30 34 28	180	430	Also identified as SNR G80
714j	50,71	1 34 14.4	30 34 38	92	116	
714k	50,71	1 34 15.5	30 34 19	170	447	
714l	50,71	1 34 14.3	30 34 51	230	429	
714m	50,71	1 34 15.2	30 34 45	77	160	
715a	50,72	1 34 22.4	30 33 17	290	719	
715b	50,72	1 34 23.2	30 33 3	180	493	
716	50	1 34 22.2	30 32 35	59	154	
717a	49,72	1 34 33.9	30 35 24	25	55	
717b	49,72	1 34 34.1	30 35 13	110	147	
718	49	1 34 35.0	30 35 49	59	222	
719	49	1 34 32.5	30 36 5	75	183	
720	50	1 34 16.3	30 36 42	240	359	
721	44	1 34 21.2	30 37 56	98	283	
722	44	1 34 18.5	30 38 39	--	--	
723	44	1 34 16.9	30 39 17	23	57	
724a	44,72	1 34 19.7	30 39 23	21	82	
724b	44,72	1 34 19.5	30 39 17	29	112	
724c	44,72	1 34 18.5	30 39 7	7.2	44	
725	43	1 34 46.5	30 38 13	62	129	
726	43	1 34 47.2	30 37 52	9.4	29	
729	43	1 34 38.5	30 37 49	63	341	Also identified as SNR G96

730	43	1 34 37.1	30 38 14	--	--	
731	44	1 34 25.0	30 39 48	37	84	
732	44,45	1 34 13.1	30 40 2	150	391	
733	44	1 34 13.1	30 40 14	69	270	
734	44	1 34 30.0	30 40 33	190	284	
735	44	1 34 30.5	30 41 20	70	163	
736	44	1 34 33.7	30 41 3	31	36	
737	43	1 34 38.0	30 40 53	74	151	
738a	43,72	1 34 39.0	30 41 4	93	113	
738b	43,72	1 34 39.5	30 41 3	41	83	
739	43	1 34 41.9	30 41 8	50	193	
740a	43,72	1 34 39.6	30 41 58	300	385	
740b	43,72	1 34 39.5	30 41 46	660	454	
740c	43,72	1 34 39.1	30 41 34	220	300	
740d	43,72	1 34 40.1	30 41 18	36	138	
741	43	1 34 36.8	30 41 39	19	95	
742	43	1 34 38.9	30 41 18	120	204	
743a	44,72	1 34 14.3	30 42 18	42	146	
743b	44,72	1 34 14.5	30 42 26	35	130	
743c	44,72	1 34 15.2	30 42 26	31	124	
743d	44,72	1 34 12.0	30 42 40	30	177	
743e	44,72	1 34 11.7	30 42 55	8.6	43	
744	44	1 34 13.2	30 41 56	63	93	
745	49	1 34 37.3	30 35 0	--	--	
746a	39,72	1 34 19.3	30 44 18	29	181	
746b	39,72	1 34 20.6	30 44 34	21	138	
747	39	1 34 12.7	30 45 5	83	135	
748	38,43	1 34 36.5	30 44 11	--	--	
749	38,43	1 34 38.9	30 44 6	--	--	
750a	43,72	1 34 40.5	30 43 36	77	156	
750b	43,72	1 34 40.9	30 43 32	140	187	See note e, also identified as SNR G97
750c	43,72	1 34 40.0	30 43 27	67	197	
750d	43,72	1 34 41.1	30 43 9	5.4	29	
750e	43,72	1 34 39.1	30 43 16	8.6	44	

751	50	1 34 6.9	30 36 30	120	462	Contains SNR G70
752	43	1 34 55.3	30 41 18	140	543	
753	43	1 34 59.2	30 41 35	--	--	
756	43	1 35 7.1	30 41 45	--	--	
758	55,56	1 33 56.5	30 27 16	250	849	
1001	46,51	1 33 45.9	30 35 58	240	269	
1002	51	1 33 43.6	30 35 32	--	--	
1003	51	1 33 38.8	30 35 4	150	274	
1004	51	1 33 36.6	30 35 41	100	244	
1005	46	1 33 33.4	30 37 21	430	1021	
1006a	46,72	1 33 31.5	30 38 1	63	107	
1006b	46,72	1 33 31.4	30 37 55	69	130	
1006c	46,72	1 33 30.9	30 38 2	150	307	
1006d	46,72	1 33 30.3	30 38 8	20	70	
1006e	46,72	1 33 29.6	30 37 44	30	159	
1007a	46,47,73	1 33 25.8	30 38 58	120	94	
1007b	46,47,73	1 33 26.3	30 38 53	170	191	
1007c	46,47,73	1 33 26.9	30 39 2	210	256	
1008a	46,73	1 33 35.9	30 38 43	53	34	
1008b	46,73	1 33 35.2	30 38 43	150	535	
1501a	51,73	1 33 50.3	30 32 30	71	174	
1501b	51,73	1 33 51.5	30 32 32	40	109	
1502a	51,73	1 33 43.4	30 32 12	76	213	
1502b	51,73	1 33 44.4	30 31 45	99	354	

BCLMP emission regions are labeled on the M33 charts with their number and no prefix. Separate sub-components of complex regions are given lowercase Arabic letters and are identified on Charts 59-83.

Notes to table:

^aFlux is in units of 10^{-15} erg cm⁻² s⁻¹ (from Wyder et al., 1997).

^bArea is in units of arcsec² (from Wyder et al., 1997).

^cSNR candidates are from Sabbadin (1979, identified with prefix S), D’Odorico, Dopita, and Benvenuti (1980, prefix DDB), and Gordon et al. (1998, prefix G). Gordon et al. (1998) cross-reference various identifications of the SNRs.

^dBCLMP 660 appears as a complete ring in Figure 7b of Courtès et al. (1987). We detect only a partial ring in our images.

^eSNR DDB 18 is contained within BCLMP 750. Gordon et al. (1998) do not identify it with G97, but we believe they are the same object.

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Table 4b. M33 Emission Regions Identified by Courtès et al. (1987)

ID	Chart	RA(2000)	DEC(2000)	Flux ^a	Area ^b	Comments
CPSDPI	58	1 32 42.4	30 20 22	24	78	
1Aa	50,51,73	1 33 58.2	30 34 15	190	472	
1Ab	50,51,73	1 34 0.5	30 34 17	660	666	Contains SNR G65 ^c
1Ac	50,51,73	1 34 0.5	30 34 36	37	95	
1Ad	50,51,73	1 33 59.9	30 34 27	240	128	
1Ae	50,51,73	1 33 59.7	30 34 34	480	394	
1Af	50,51,73	1 34 0.6	30 34 45	44	150	
1Ag	50,51,73	1 33 59.3	30 34 50	150	311	
2	58	1 32 43.0	30 21 58	30	46	
2Aa	51,73	1 33 51.7	30 33 34	69	130	
2Ab	51,73	1 33 51.3	30 33 21	13	40	
2Ac	51,73	1 33 51.8	30 33 23	36	65	
2Ad	51,73	1 33 52.0	30 33 29	42	84	
2Ae	51,73	1 33 52.6	30 33 30	28	75	
3a	58,73	1 32 38.9	30 25 4	11	20	
3b	58,73	1 32 38.1	30 24 49	140	246	
3c	58,73	1 32 37.7	30 24 39	62	158	
3A	58	1 32 39.3	30 24 51	130	265	
3B	58	1 32 40.2	30 24 43	62	132	
4	58	1 52 35.5	30 25 31	3.9	16	
4Aa	50,51,73	1 33 55.9	30 35 12	5.9	31	
4Ab	50,51,73	1 33 57.3	30 35 10	120	237	
5a	58,73	1 32 34.3	30 26 24	28	76	
5b	58,73	1 32 34.9	30 26 27	19	72	
6	53	1 32 34.3	30 27 5	280	316	
7	53	1 32 35.1	30 27 13	170	206	
8	58	1 32 44.7	30 22 14	7.6	33	Also identified as SNR G4
9	58	1 32 45.2	30 23 21	--	--	
10	51	1 33 42.3	30 33 11	250	192	
10A	51	1 33 42.1	30 32 56	480	340	
11	58	1 33 42.1	30 32 59	--	--	
13a	58,74	1 32 54.1	30 25 27	22	66	Also identified as SNR G7

13b	58,74	1 32 54.5	30 25 31	4.6	19	
14	50,51	1 33 54.6	30 36 46	34	100	
15	58	1 32 55.1	30 23 43	18	38	
16	58	1 32 57.5	30 23 43	8.1	37	
17	58	1 32 57.4	30 23 16	5.7	25	
18	58	1 32 59.2	30 24 16	38	87	
19a	58,74	1 32 59.8	30 23 42	18	70	
19b	58,74	1 33 0.0	30 23 16	3.3	12	
20a	58,74	1 32 56.5	30 25 56	12	28	
20b	58,74	1 32 56.1	30 25 52	36	123	
21	58	1 33 0.3	30 24 32	34	55	
22	57,58	1 33 1.4	30 24 31	130	101	
23	52	1 33 14.0	30 29 41	90	92	
23Aa	57,74	1 33 4.5	30 23 26	4.9	16	
23Ab	57,74	1 33 4.0	30 23 22	19	57	
23Ac	57,74	1 33 3.7	30 23 11	25	88	
23Ad	57,74	1 33 3.6	30 23 25	64	264	
24	57	1 33 3.4	30 22 1	1.4	5	
25	52	1 33 2.8	30 29 31	39	68	
26	52	1 33 4.0	30 29 46	4.0	14	
26Aa	52,74	1 33 6.8	30 30 11	79	206	
26Ab	52,74	1 33 6.2	30 30 6	51	179	
26Ac	52,74	1 33 5.6	30 30 2	9.4	40	
26Ad	52,74	1 33 8.4	30 30 22	34	113	
26Ae	52,74	1 33 7.8	30 30 21	69	272	
27	52	1 33 4.2	30 28 54	29	91	
27A	52	1 33 4.8	30 29 29	26	73	
28	52	1 33 8.7	30 27 53	100	362	
30	57	1 33 12.3	30 23 1	33	59	
30A	57	1 33 15.8	30 23 47	79	287	
31	52	1 33 13.0	30 28 9	45	176	
32	57	1 33 13.5	30 22 35	7.4	12	
33a	51,74	1 33 36.8	30 33 46	21	72	
33b	51,74	1 33 37.8	30 33 51	12	48	
33Aa	51,74	1 33 37.1	30 32 51	20	71	Also identified as SNR G36

33Ab	51,74	1 33 37.1	30 33 0	6.1	21	
33Ac	51,74	1 33 37.1	30 33 9	56	248	
33Ad	51,74	1 33 37.3	30 33 27	12	48	
34	52	1 33 14.1	30 27 10	130	117	
36	57	1 33 20.4	30 26 34	11	39	
37	57	1 33 21.8	30 25 59	19	76	
38	57	1 33 21.9	30 25 40	14	29	
40	52,57	1 33 22.5	30 27 3	9.1	25	Also identified as SNR G24
41	57	1 33 23.4	30 26 32	22	62	
42	57	1 33 23.9	30 26 13	33	53	Also identified as SNR G25
43	57	1 33 26.2	30 24 6	11	40	
43Aa	57,74	1 33 21.2	30 26 26	3.6	14	CPSDP 43A is possibly SNR DDB5
43Ab	57,74	1 33 20.0	30 26 20	8.1	35	
43Ac	57,74	1 33 20.0	30 26 7	6.7	29	
43Ad	57,74	1 33 20.8	30 25 55	1.4	5	
47	57	1 33 32.2	30 20 13	34	47	
48	57	1 33 33.0	30 20 27	56	85	
50	56	1 33 35.5	30 25 17	--	--	
51	56	1 33 35.4	30 25 54	21	36	
53a	51,74	1 33 46.7	30 32 42	96	147	
53b	51,74	1 33 45.6	30 32 44	28	74	
54	53	1 32 30.4	30 32 37	--	--	
58a	42,75	1 32 45.7	30 44 42	19	37	
58b	42,75	1 32 45.9	30 44 38	18	42	
60	48	1 32 46.0	30 40 45	7.7	43	
61	48	1 32 42.5	30 35 52	25	70	
62	48	1 32 44.3	30 36 1	81	125	
63	48	1 32 46.8	30 34 11	63	157	
64	48	1 32 51.8	30 38 7	45	219	Also identified as SNR G5
65	48	1 32 56.7	30 40 11	30	122	
65Aa	40,45,75	1 33 50.8	30 43 59	56	101	
65Ab	40,45,75	1 33 50.4	30 43 46	95	236	Also identified as SNR G50
65Ac	40,45,75	1 33 51.2	30 44 2	1.2	6	
66a	42,75	1 32 58.5	30 41 26	24	62	

66b	42,75	1 32 59.3	30 41 20	19	84	
67	42	1 32 58.8	30 41 5	24	131	
68	42	1 33 1.2	30 41 0	12	54	
69a	48,75	1 32 53.2	30 37 46	79	182	Ring is SNR G6
69b	48,75	1 32 53.9	30 37 52	26	91	
69c	48,75	1 32 53.0	30 37 40	19	63	
69d	48,75	1 32 53.6	30 37 46	40	120	
69Aa	48,75	1 32 52.6	30 37 4	31	115	
69Ab	48,75	1 32 52.8	30 36 49	9.0	32	
69Ac	48,75	1 32 53.6	30 36 42	13	56	
70	48	1 32 56.7	30 39 22	56	89	Also identified as SNR G9
71	48	1 32 57.0	30 39 7	20	105	
72	53	1 32 51.8	30 33 3	45	58	
73a	53,75	1 32 52.4	30 31 38	13	53	
73b	53,75	1 32 53.5	30 31 37	2.2	9	
73Aa	53,75	1 32 53.9	30 29 46	77	254	
73Ab	53,75	1 32 50.0	30 29 33	11	48	
74	53	1 32 56.3	30 31 48	270	668	
75	47	1 33 1.0	30 35 15	--	--	
75A	47	1 33 1.2	30 34 50	160	444	
76	53	1 32 56.9	30 32 13	62	168	
77a	47,52,53,75	1 33 0.5	30 33 47	37	112	
77b	47,52,53,75	1 33 1.1	30 33 29	170	309	
77c	47,52,53,75	1 33 0.4	30 33 32	60	204	
78	45	1 34 3.4	30 37 54	93	320	
78Aa	47,75	1 33 0.6	30 33 54	12	21	
78Ab	47,75	1 33 0.9	30 33 58	14	196	
79	47	1 33 6.3	30 38 39	200	1114	
80	46	1 33 35.5	30 40 51	64	167	
81	45,46	1 33 40.3	30 38 20	450	1512	
82	47	1 33 10.9	30 39 38	180	700	Also identified as SNR G20
83	47	1 33 11.0	30 39 10	200	560	
84	47	1 33 13.3	30 39 24	82	134	
85	47	1 33 12.9	30 39 15	180	303	
85A	47	1 33 26.6	30 38 35	130	265	

86	47	1 33 12.5	30 38 36	990	925	Contains SNR G21
86Aa	47,76	1 33 27.6	30 39 6	160	699	
86Ab	47,76	1 33 27.3	30 39 40	32	128	
87a	45,76	1 33 57.3	30 41 56	56	183	
87b	45,76	1 33 56.4	30 41 42	21	82	
88	52	1 33 4.9	30 31 54	91	103	
90	42	1 32 49.6	30 45 50	9.9	14	
91	37	1 32 52.2	30 50 13	20	16	
92	42	1 32 55.6	30 43 48	30	78	
93	42	1 33 6.3	30 45 53	52	176	
95	37	1 33 9.6	30 49 49	29	183	
96	37	1 33 9.5	30 49 13	70	386	
97	37	1 33 10.4	30 48 17	21	90	
98	44	1 34 14.1	30 37 32	220	443	
100a	41,42,76	1 33 13.5	30 45 23	100	234	
100b	41,42,76	1 33 12.3	30 45 38	190	577	
101a	37,76	1 33 11.7	30 48 58	320	878	
101b	37,76	1 33 12.4	30 48 33	500	1572	
102	37	1 33 12.5	30 49 12	200	255	
103	37	1 33 15.1	30 51 53	22	40	
104	37	1 33 12.9	30 53 35	60	289	
104A	37	1 33 16.5	30 53 43	87	404	
105a	37,76	1 33 17.2	30 54 26	8.5	44	
105b	37,76	1 33 17.4	30 54 19	14	71	
108	41	1 33 23.0	30 47 31	30	138	
109	36	1 33 29.1	30 50 6	11	37	
110	36	1 33 37.7	30 51 16	--	--	
111	36	1 33 29.7	30 50 17	13	64	
112	36	1 33 35.6	30 50 49	190	118	
113	47	1 33 7.3	30 35 12	27	45	
114a	47,76	1 33 9.3	30 34 53	95	210	
114b	47,76	1 33 10.0	30 34 41	15	56	
114c	47,76	1 33 8.9	30 34 42	12	49	
115a	47,76	1 33 10.5	30 34 22	19	62	
115b	47,76	1 33 11.8	30 34 11	38	95	Also identified as SNR G19

115c	47,76	1 33 12.1	30 34 17	65	133	Also identified as SNRG19
115d	47,76	1 33 11.5	30 34 36	31	114	
115e	47,76	1 33 11.0	30 34 20	64	151	
116	47	1 33 12.5	30 34 10	240	382	
117	52	1 33 11.9	30 31 38	43	145	
121	52	1 33 17.0	30 31 8	72	61	
122	52	1 33 18.9	30 33 14	80	181	
123a	52,76	1 33 20.6	30 32 52	16	79	
123b	52,76	1 33 20.6	30 32 46	74	144	
123A	52	1 33 16.3	30 32 29	37	155	
124	52	1 33 22.1	30 32 16	38	79	
125	52	1 33 20.9	30 30 31	15	56	
128	46	1 33 31.3	30 38 34	52	111	See note d
129a	52,76	1 33 23.4	30 31 33	39	71	
129b	52,76	1 33 23.1	30 31 29	4.1	10	
129Aa	51,52,77	1 33 28.0	30 31 26	64	169	Contains SNR G27
129Ab	51,52,77	1 33 28.8	30 31 29	31	95	
130a	46,77	1 33 31.0	30 37 15	5.2	8	
130b	46,77	1 33 31.1	30 37 21	23	64	
131	51,52	1 33 31.2	30 33 51	28	69	
131A	46	1 33 30.3	30 36 56	--	--	
132	51	1 33 34.6	30 33 14	88	300	
132A	51	1 33 35.1	30 32 53	37	90	
133a	51,77	1 33 36.9	30 34 31	60	229	
133b	51,77	1 33 35.7	30 34 24	18	69	
133A	--	1 33 37.5	30 35 10	44	104	See note e
134	46,51	1 33 37.4	30 36 11	41	116	
135	46,51	1 33 39.0	30 36 28	85	234	See note f
136	46	1 33 40.1	30 36 48	59	163	See note f
137	51	1 33 38.3	30 30 14	41	90	
138	46	1 33 37.5	30 39 30	48	40	
139	56	1 33 42.3	30 25 47	30	74	
140a	45,77	1 33 49.9	30 40 52	180	473	
140b	45,77	1 33 50.5	30 41 8	72	204	
141	51	1 33 48.6	30 33 55	87	207	

141Aa	50,51,77	1 33 52.4	30 33 58	1.7	5	
141Ab	50,51,77	1 33 52.8	30 33 57	15	55	
141B	50,51	1 33 54.1	30 33 51	68	195	Also identified as SNR G53
143	51	1 33 49.8	30 35 30	34	137	Also identified as SNR G49
143A	50,51	1 33 54.4	30 34 46	--	--	
144	51	1 33 49.3	30 30 50	30	180	
145a	56,77	1 33 49.5	30 29 31	66	316	
145b	56,77	1 33 51.0	30 29 36	9.8	59	
145c	56,77	1 33 50.9	30 29 22	28	164	
145d	56,77	1 33 50.4	30 29 6	3.3	21	
146	51	1 33 51.4	30 31 4	12	85	Also identified as SNR G52
147	51	1 33 51.5	30 30 39	17	115	Also identified as SNR G51
148	56	1 33 52.1	30 28 30	--	--	
148Aa	55,56,77	1 33 56.8	30 27 11	21	102	
148Ab	55,56,77	1 33 58.9	30 27 30	7.4	31	
148Ac	55,56,57	1 33 57.7	30 27 54	16	94	
148Ad	55,56,77	1 33 54.5	30 27 52	21	137	
149	50,51	1 33 54.8	30 32 44	88	224	
150	51	1 33 51.3	30 35 49	23	21	
160a	45,77	1 33 52.3	30 37 26	19	119	
160b	45,77	1 33 52.7	30 37 37	6.2	9	
160c	45,77	1 33 52.9	30 37 44	70	254	
160A	45	1 33 52.8	30 37 14	--	--	
171	45	1 33 59.2	30 40 56	130	258	
171Aa	45,77	1 34 0.6	30 40 35	110	138	
171Ab	45,77	1 34 0.5	30 40 41	19	24	
172	35	1 34 12.8	30 52 8	79	251	
173	35	1 34 8.8	30 51 44	32	130	
174	50	1 34 1.4	30 30 25	8.0	31	
175a	50,78	1 34 1.9	30 30 45	95	201	
175b	50,78	1 34 2.7	30 30 40	12	67	
176a	50,78	1 34 3.2	30 31 25	48	153	
176b	50,78	1 34 2.3	30 31 20	90	153	
176c	50,78	1 34 2.7	30 31 15	44	174	Area just south is SNR G67
180	50	1 34 2.7	30 36 49	95	280	

181a	50,78	1 34 0.7	30 32 1	25	106	
181b	50,78	1 34 1.7	30 32 0	2.5	12	
181c	50,78	1 34 1.2	30 31 58	11	49	
181d	50,78	1 34 1.1	30 31 54	9.5	39	
181e	50,78	1 34 0.9	30 31 51	9.4	47	
182a	50,78	1 34 7.8	30 32 46	4.3	8	
182b	50,78	1 34 8.1	30 32 46	12	24	
183	50	1 34 8.7	30 30 54	14	46	
184a	50,78	1 34 12.4	30 35 7	44	171	Also identified as SNR G74
184b	50,78	1 34 13.1	30 35 12	32	109	
184A	50	1 34 9.3	30 34 13	78	175	
185a	50,78	1 34 13.4	30 35 24	2.8	8	
185b	50,78	1 34 13.7	30 35 18	75	105	
187	50	1 34 15.4	30 30 59	17	105	
188a	50,78	1 34 18.3	30 31 40	12	60	
188b	50,78	1 34 19.0	30 31 31	33	144	
188c	50,78	1 34 19.5	30 31 17	2.1	14	
189	50	1 34 19.8	30 31 1	4.0	21	
190a	49,50,78	1 34 24.0	30 31 25	30	129	
190b	49,50,78	1 34 23.4	30 31 15	23	98	
190c	49,50,78	1 34 24.6	30 31 11	31	182	
192	50	1 34 19.6	30 33 54	73	119	Also identified as SNR G87
193	41,42	1 33 14.4	30 45 1	330	272	
194	41,42	1 33 13.5	30 45 23	500	1466	
196a	41,42,78	1 33 14.2	30 45 13	580	622	IC 131
196b	41,42,78	1 33 14.4	30 45 1	440	358	IC 131
197	41	1 33 16.9	30 45 4	120	175	
198	41	1 33 15.0	30 44 29	170	1791	
199	36	1 33 24.4	30 49 59	18	122	
200	41	1 33 25.3	30 43 28	9.4	54	
201	41	1 33 25.8	30 45 56	8.8	63	
202	41	1 33 26.9	30 44 59	13	37	
203a	36,79	1 33 29.3	30 49 3	5.4	17	Also identified as SNR G29
203b	36,79	1 33 29.4	30 49 5	2.0	7	
204a	44,45,79	1 34 8.3	30 39 17	130	318	

204b	44,45,79	1 34 7.8	30 39 12	36	19	
204c	44,45,79	1 34 7.6	30 39 4	37	135	
205	41,46	1 33 25.2	30 41 34	18	98	
206	41,46	1 33 28.7	30 42 11	83	51	Also identified as SNR G28
207	41	1 33 31.2	30 47 22	8.8	33	
208	44,45	1 34 10.4	30 39 13	120	89	
209a	40,41,79	1 33 33.1	30 43 14	68	208	
209b	40,41,79	1 33 33.8	30 43 7	12	58	
210	40,41	1 33 33.8	30 44 39	9.8	47	
211a	36,79	1 33 35.3	30 49 19	8.6	28	CPSDP 211 also identified as SNR G34
211b	36,79	1 33 35.5	30 49 16	2.6	9	
211c	36,79	1 33 35.3	30 49 16	4.0	15	
212	40,41	1 33 57.8	30 49 2	100	80	
213	40	1 33 39.1	30 44 7	25	92	
214	36,40	1 33 37.1	30 48 43	23	157	
215	40	1 33 40.9	30 47 48	30	107	
216	40	1 33 42.5	30 46 28	--	--	
217	40	1 33 43.6	30 47 17	--	--	
218	40	1 33 43.3	30 45 39	15	55	
219	40	1 33 44.8	30 47 20	23	110	
220	36	1 33 46.8	30 51 22	--	--	
221	36	1 33 48.4	30 52 4	9.9	58	
222a	36,79	1 33 49.6	30 52 24	21	86	
222b	36,79	1 33 49.0	30 52 18	3.8	18	
223	39,40	1 33 58.5	30 47 25	9.9	27	See note g
223C	45,46	1 33 43.5	30 41 24	99	284	See note g
224	39,40	1 33 57.8	30 46 36	35	94	See note g
224A	39,40	1 33 57.0	30 46 5	14	56	
224C	45,46	1 33 42.6	30 41 14	70	178	See note g
226	40	1 33 52.2	30 44 57	210	585	
226Aa	40,79	1 33 47.3	30 44 39	45	88	
226Ab	40,79	1 33 47.5	30 44 43	53	137	
227	40	1 33 52.9	30 45 47	240	431	
228	40	1 33 52.7	30 46 13	46	122	

229	39,40	1 33 55.9	30 47 56	9.9	58	
230	39,40	1 33 57.7	30 48 57	91	167	
231a	35,79	1 33 58.4	30 51 57	5.0	25	
23 1b	35,79	1 33 59.0	30 51 49	5.1	23	Also identified as SNR G61
232	39,40	1 33 55.5	30 44 56	180	525	
233	39,40	1 33 58.5	30 48 29	48	78	
233A	39,40	1 33 58.6	30 48 40	120	123	
234a	39,79	1 33 59.7	30 49 21	5.7	14	
234b	39,79	1 33 59.8	30 49 19	12	25	
235a	40,45,79	1 34 0.9	30 43 41	32	85	
235b	40,45,79	1 34 1.5	30 43 37	2.9	13	
236a	40,45,80	1 33 54.1	30 43 3	29	124	
236b	40,45,80	1 33 54.8	30 43 1	28	115	
236c	40,45,80	1 33 55.6	30 43 6	20	79	
236d	40,45,80	1 33 55.6	30 43 12	71	184	
236e	40,45,80	1 33 55.0	30 43 21	31	103	
236f	40,45,80	1 33 51.6	30 43 21	150	507	
236g	40,45,80	1 33 51.9	30 42 58	59	225	
236h	40,45,80	1 33 51.5	30 43 5	50	250	
236i	40,45,80	1 33 51.7	30 43 10	23	61	
237	40,45	1 33 55.7	30 42 48	8.0	15	
238	40,45	1 33 59.4	30 43 2	17	91	
239	39,40	1 34 1.3	30 44 30	23	96	
240a	40,45,80	1 34 0.3	30 42 19	11	28	CPSDP 240 also identified as SNR G64
240b	40,45,80	1 33 59.9	30 42 15	11	32	
241	39,40,45	1 34 1.5	30 44 0	--	--	
242	39,40	1 34 3.4	30 44 6	30	175	
243	39,40	1 34 3.4	30 44 42	12	75	Also identified as SNR G68
244	39,40	1 34 2.2	30 45 52	28	121	
245	39,40	1 34 1.3	30 46 38	--	--	
246a	39,80	1 34 5.8	30 48 3	17	40	
246b	39,80	1 34 5.5	30 47 48	40	145	
246A	39	1 34 7.0	30 47 53	79	211	
246B	39	1 34 8.3	30 47 46	--	--	
247	39	1 34 6.8	30 48 53	280	234	

248	35	1 34 3.7	30 50 47	10	71	
249	39	1 34 7.0	30 49 37	25	73	
250	39	1 34 10.2	30 49 5	18	85	
251	39	1 34 10.5	30 49 17	33	122	
252	39	1 34 11.2	30 49 21	17	93	
253	44,45	1 34 11.6	30 43 17	18	25	
254	44,45	1 34 11.6	30 43 28	13	59	
255	44,45	1 34 10.6	30 42 4	12	65	
256a	39,80	1 34 14.8	30 44 9	1.8	5	
256b	39,80	1 34 14.4	30 44 22	35	184	
256c	39,80	1 34 13.6	30 44 38	17	42	
256d	39,80	1 34 12.9	30 44 27	22	154	
256e	39,80	1 34 11.9	30 44 21	3.1	14	
257	39	1 34 12.7	30 46 4	31	93	
258a	39,80	1 34 13.6	30 47 23	13	24	
258b	39,80	1 34 13.8	30 47 19	25	53	
259	39	1 34 14.4	30 49 37	6.4	34	
260	39	1 34 14.2	30 49 30	17	101	
261a	39,80	1 34 19.2	30 48 33	72	176	
261b	39,80	1 34 19.8	30 48 37	62	141	
262	39	1 34 24.9	30 48 58	--	--	
263a	58,80	1 32 45.4	30 25 28	110	448	
263b	58,80	1 32 45.9	30 24 45	27	103	
263c	58,80	1 32 44.9	30 24 25	68	221	
263d	58,80	1 32 43.2	30 24 23	100	301	
265	51	1 33 36.5	30 31 7	66	164	
266a	51,80	1 33 35.6	30 32 22	24	69	
266b	51,80	1 33 36.1	30 32 17	16	43	
267a	51,80	1 33 32.2	30 31 44	40	112	
267b	51,80	1 33 33.0	30 31 39	71	198	
270	39	1 34 16.2	30 48 34	--	--	
271a	35,81	1 34 19.2	30 51 43	26	176	
271b	35,81	1 34 20.2	30 51 23	11	83	
272	44	1 34 14.5	30 38 53	--	--	
273	50	1 34 13.6	30 36 45	43	96	

273A	50	1 34 16.1	30 36 29	63	146		
274	44	1 34 17.3	30 41 16	30	144	Also identified as SNR G85	
274A	44	1 34 21.5	30 40 33	7.7	26		
275	44	1 34 16.4	30 43 18	--	--		
276	39	1 34 19.2	30 44 4	68	232		
277a	39,81	1 34 19.0	30 45 1	20	83		
277b	39,81	1 34 19.1	30 44 55	7.5	32		
277c	39,81	1 34 18.4	30 44 50	2.2	16		
279	39	1 34 22.0	30 47 9	42	96		
280a	39,81	1 34 22.3	30 45 20	45	286		
280b	39,81	1 34 20.3	30 45 32	53	304		
280c	39,81	1 34 22.7	30 46 5	72	500		
281a	38,81	1 34 31.7	30 48 19	5.9	16		
281b	38,81	1 34 31.8	30 48 14	41	141		
282	38	1 34 32.9	30 49 22	6.4	36		
283	38	1 34 34.9	30 48 26	--	--		
284	38	1 34 37.2	30 46 50	59	235		
284A	38	1 34 37.8	30 46 28	--	--		
292	38	1 34 35.7	30 46 4	--	--		
295	35	1 34 3.7	30 54 23	19	98		
302	34,35	1 34 24.7	30 56 20	35	157		
303	34	1 34 26.0	30 56 25	7.0	44		
304a	43,81	1 34 40.9	30 43 50	9.7	49		
304b	43,81	1 34 39.9	30 43 46	25	116		
305a	35,81	1 34 15.8	30 53 41	68	279		
305b	35,81	1 34 16.2	30 53 26	68	316		
305A	35	1 34 14.2	30 53 46	50	197	Also identified as SNR G78	
307	56	1 33 46.6	30 27 21	210	204		
311	55,56	1 33 56.8	30 28 45	38	95		
314	55,56	1 33 57.1	30 25 8	40	149		
320	55	1 34 5.3	30 23 45	--	--		
321	55	1 34 8.2	30 23 23	21	28		
322	55	1 34 10.4	30 25 56	48	151		
322A	55	1 34 14.2	30 25 47	45	112		
324	55	1 34 11.4	30 27 14	12	52		

325	55	1 34 12.9	30 27 29	1.4	7	
326	55	1 34 14.1	30 23 14	--	--	
327	55	1 34 15.3	30 27 48	4.6	17	
328	55	1 34 15.8	30 28 9	17	99	
329	55	1 34 19.0	30 23 28	64	110	
330	55	1 34 22.8	30 25 28	9.6	61	Also identified as SNR G88
331	54	1 34 28.5	30 24 53	1.8	13	
332	54	1 34 29.0	30 23 46	16	42	
334	54	1 34 42.2	30 23 58	20	14	
338a	49,81	1 34 29.9	30 35 16	2.3	9	
338b	49,81	1 34 29.4	30 35 15	7.2	47	
339a	49,81	1 34 29.7	30 35 41	11	37	Also identified as SNR G92
339b	49,81	1 34 30.1	30 35 37	3.2	15	
339c	49,81	1 34 30.6	30 35 42	3.3	20	
340	44	1 34 32.0	30 37 26	--	--	
341	49	1 34 32.5	30 35 22	22	93	Also identified as SNR G93
343	44	1 34 24.3	30 39 3	8.5	31	
344	44	1 34 26.7	30 39 41	6.4	36	
345	44	1 34 33.2	30 40 6	--	--	
347	43	1 34 39.5	30 39 8	--	--	Also identified as SNR DDB17
348a	43,81	1 34 44.1	30 42 40	20	65	
348b	43,81	1 34 44.7	30 42 32	17	53	Also identified as SNR G98
349	43	1 34 44.2	30 47 20	--	--	
350	43	1 34 45.4	30 42 22	48	62	
352	43	1 34 44.7	30 38 44	15	81	
353	49	1 34 38.0	30 32 28	12	36	
354	49	1 34 40.3	30 33 53	12	54	
356a	49,82	1 34 42.0	30 32 23	4.9	10	
356b	49,82	1 34 42.0	30 32 30	23	73	
357	49	1 34 40.6	30 30 52	42	73	
358	49	1 34 43.3	30 31 59	37	149	
358A	49	1 34 45.4	30 32 37	--	--	
359	49	1 34 50.8	30 36 8	--	--	
360a	43,82	1 34 42.8	30 37 19	52	354	

360b	43,82	1 34 42.7	30 37 43	6.5	47	
360c	43,82	1 34 44.8	30 38 1	17	90	
360d	43,82	1 34 44.0	30 37 54	9.2	63	
360e	43,82	1 34 45.3	30 37 47	15	105	
361	49	1 34 52.5	30 35 25	--	--	
366	43	1 35 5.4	30 41 25	--	--	
366A	43	1 35 5.9	30 41 5	--	--	
368	35	1 35 15.2	30 54 37	--	--	
370a	34,82	1 34 24.8	30 52 39	3.7	13	
370b	34,82	1 34 24.4	30 52 36	38	260	
371	43	1 35 0.0	30 41 48	9.2	36	
372	34,35	1 34 25.4	30 55 2	37	169	Also identified as SNR G89
373	34,35	1 34 25.5	30 54 33	21	126	
374	34	1 34 28.0	30 54 21	21	118	
377	34	1 34 31.7	30 57 22	130	164	
378	34	1 34 32.0	30 57 33	110	168	
379	34	1 34 35.0	30 56 48	--	--	
380	34	1 34 35.3	30 56 42	37	242	
381	34	1 34 35.0	30 52 1	20	44	
383	34	1 34 39.5	30 57 16	--	--	
384a	34,82	1 34 41.5	30 51 6	20	81	
384b	34,82	1 34 40.3	30 51 17	22	173	
385	35	1 34 42.9	30 49 23	--	--	
386	34	1 34 50.6	30 55 28	--	--	
387	34	1 34 50.9	30 54 20	--	--	
388	34	1 34 52.0	30 54 19	26	118	
389	34	1 34 52.6	30 53 52	51	44	
390	34	1 34 53.3	30 54 44	40	137	
394	53	1 32 33.8	30 27 28	51	83	
395	58	1 32 39.5	30 22 26	79	215	
396a	58,82	1 32 41.8	30 21 13	7.1	24	
396b	58,82	1 32 42.0	30 21 10	15	51	
398	48	1 32 43.6	30 35 15	23	18	
399	58	1 32 44.1	30 22 3	11	11	
400a	48,82	1 32 44.6	30 35 16	40	59	

400b	48,82	1 32 44.8	30 35 16	3.5	7	
401	42	1 32 45.4	30 41 29	10	26	
402	58	1 32 48.7	30 25 51	13	13	
403	52	1 33 7.4	30 30 57	42	75	
407	44,45	1 34 10.9	30 42 18	79	43	
409a	58,82	1 32 42.2	30 22 23	20	37	
409b	58,82	1 32 42.1	30 22 28	2.9	7	
410	58	1 32 38.5	30 25 12	9.2	41	

CPSDP emission regions are labeled on the M33 charts with the prefix Z. Separate sub-components of complex regions are given lowercase Arabic letters and are identified on Charts 59-83.

Notes to table:

^aFlux is in units of 10^{-15} erg cm⁻² s⁻¹ (from Wyder et al., 1997).

^bArea is in units of arcsec² (from Wyder et al., 1997).

^cSNR candidates are from Sabbadin (1979, identified with prefix S), D'Odorico, Dopita, and Benvenuti (1980, prefix DDB), and Gordon et al. (1998, prefix G). Gordon et al. (1998) cross-reference various identifications of the SNRs.

^dCPSDP 128 (Z128) has the same position as CPSDP BOA (Z130A) in Table 2 of Courtès et al. (1987). We have identified this HII region as Z128 because it is labeled as Z128 in their Figure 6b.

^eThe HII region we identify as CPSDP 133A (Z133A) is labeled in figure 5b of Courtès et al. (1987) but is absent from their Table 2.

^fThe regions CPSDP 135 (Z135) and CPSDP 136 (Z136) which are listed in Table 2 of Courtès et al. (1987) are labeled correctly in their Figure 5b. They are mislabeled as Z134A and Z134B in their Figure 6b.

^gThe labels CPSDP 223 (Z223) and CPSDP 224 (Z224) are each assigned to two different objects in Figure 6b of Courtès et al. (1987) but are only listed once in their Table 2. The positions in Table 2 match the positions of the northern-most Z223 and Z224 in their Figure 6b. We have labeled the southern Z223 and Z224 as CPSDP 223C (Z223C) and CPSDP 224C (Z224C), respectively.

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Table 4c. M33 Emission Regions Identified by Hodge et al. (1998)

ID	Chart	RA(2000)	DEC(2000)	Flux ^a	Area ^b	Comments ^c
HBW1	48	1 32 28.7	30 36 43	2.5	9	
2	53	1 32 29.5	30 30 51	--	--	half off frame
3	53	1 32 30.1	30 32 34	33	195	
4	53	1 32 30.2	30 26 58	7.5	46	
5	58	1 32 30.5	30 24 55	--	--	
6	53	32 31.0	30 29 32	0.25	1	u
7	48	32 31.0	30 35 54	--	--	
8	53	32 31.2	30 27 17	--	--	linear
9	48	32 31.5	30 37 16	--	--	
10	53	32 31.6	30 32 32	2.4	14	
11	48	1 32 31.7	30 36 17	--	--	d
12	53,58	1 32 31.8	30 26 50	--	--	d
13	53	1 32 31.9	30 28 6	--	--	d, linear
14	58	1 32 32.1	30 23 19	--	--	u
15	53	1 32 32.1	30 28 1	--	--	d, linear
16	58	1 32 32.2	30 23 33	1.3	6	u
17	53	1 32 32.2	30 28 57	--	--	d
18	53	1 32 32.3	30 27 6	--	--	d, linear
19	53	1 32 32.6	30 32 37	--	--	
20	53	1 32 32.7	30 30 21	--	--	d
21	53	1 32 33.0	30 27 7	--	--	d, linear
22	53	1 32 33.2	30 31 59	20	19	u
23	58	1 32 33.3	30 24 42	--	--	u
24	48	1 32 33.6	30 36 44	1.8	11	
25	53	1 32 33.7	30 28 34	--	--	d, linear
26	58	1 32 34.2	30 22 39	1.3	6	u
27	58	1 32 34.2	30 22 42	4.9	12	u
28	53	1 32 34.6	30 30 26	370	716	
29	48	1 32 35.2	30 35 20	--	--	
30	53	1 32 36.0	30 28 44	--	--	u
31	53	1 32 36.2	30 27 11	1.6	9	
32	48	1 32 36.3	30 36 48	14	34	

33		53	1 32 36.6	30 28 55	1.1	6	u
34		53	1 32 36.9	30 30 44	1.1	6	u
35		53	1 32 36.9	30 31 1	14	83	
36		53	1 32 37.0	30 27 39	1.5	10	
37		53	1 32 37.3	30 28 50	--	--	u
38		53	1 32 37.5	30 28 57	--	--	d
39		58	1 32 -37.6	30 23 20	--		
40		58	1 32 37.9	30 23 58	4.4	9	
41		58	1 32 38.1	30 22 43	--	--	
42		58	1 32 38.2	30 21 1	--	--	d
43		53	1 32 38.2	30 29 20	3.5	23	
44		58	1 32 38.8	30 25 46	0.28	1	
45		53	1 32 38.8	30 29 48	6.4	30	u
46		48	1 32 38.9	30 34 10	--	--	
47		48	1 32 39.0	30 37 28	--	--	
48		53	1 32 39.3	30 27 35	1.8	11	
49		58	1 32 39.7	30 23 41	--	--	
50		53	1 32 40.1	30 27 23	--	--	u
51		53	1 32 40.3	30 27 22	--	--	
52		58	1 32 40.6	30 23 55	--	--	d
53		58	1 32 40.6	30 37 28	0.64	3	
54		58	1 32 40.7	30 25 25	4.6	31	
55		53	1 32 41.0	30 32 56	--	--	
56		48	1 32 41.1	30 35 52	0.04	--	
57		53	1 32 41.4	30 27 15	0.54	4	
58		48	1 32 41.4	30 36 55	--	--	
59		48	1 32 41.6	30 36 0	2.4	15	
60		58	1 32 42.0	30 22 58	--	--	
61		48	1 32 42.2	30 36 34	--	--	u
62		48	1 32 42.2	30 37 26	1.7	9	
63		48	1 32 42.3	30 36 44	10	56	
64		48	1 32 42.5	30 36 22	--	--	d, arc or bubble fragment
65		48	1 32 42.5	30 36 34	26	37	
66		48	1 32 42.6	30 34 22	--	--	d, arc
67		48	1 32 43.1	30 37 8	--	--	d, arc

68	48	1 32 43.7	30 36 15	1.6	10	
69	58	1 32 43.9	30 22 45	--	--	
70	48	1 32 44.1	30 36 32	2.5	15	
71	58	1 32 45.0	30 21 45	1.2	6	u
72	48	1 32 45.2	30 35 13	3.6	15	
73	53	1 32 45.3	30 31 54	4.7	23	u
75	48	1 32 45.6	30 35 6	40	114	
76	48	1 32 45.7	30 35 18	6.0	23	
77	48	1 32 45.7	30 36 26	--	--	u
78	58	1 32 45.8	30 22 12	--	--	
79	53	1 32 45.8	30 28 53	18	59	
80	58	1 32 46.0	30 21 4	--	--	d
81	42	1 32 46.4	30 45 21	7.1	30	
82	48	1 32 46.5	30 39 30	20	207	
83	48	1 32 46.6	30 39 40	3.0	14	
84	58	1 32 46.7	30 24 22	--	--	d
85	48	1 32 46.8	30 34 35	--	--	bubble or arc
86	48	1 32 46.9	30 36 23	--	--	
87	58	1 32 47.1	30 22 31	--	--	u
88	48	1 32 47.8	30 39 44	--	--	
89	53	1 32 48.0	30 31 26	--	--	
90	48	1 32 48.4	30 34 19	--	--	d, filaments
91	48	1 32 48.4	30 35 0	0.23	1	
92	37	1 32 48.5	30 53 15	1.4	14	
93	48	1 32 49.0	30 36 46	--	--	d
94	58	1 32 49.3	30 22 11	4.7	22	
95	42	1 32 49.4	30 45 58	--	--	u
96	48	1 32 49.8	30 38 37	--	--	u
97	48	1 32 50.2	30 37 30	9.2	81	
98	48	1 32 50.3	30 35 51	--	--	d, circular arc
99	37	1 32 50.3	30 54 0	1.7	15	
100	48	1 32 50.4	30 34 32	1.6	10	
101	37	1 32 50.4	30 50 42	5.9	38	
102	48	1 32 50.5	30 37 48	1.6	14	
103	48	1 32 50.5	30 40 32	--	--	d

104	48	1 32 50.8	30 37 35	1.6	15	
105	37	1 32 50.8	30 51 27	2.3	10	u
106	48	1 32 50.9	30 35 31	--	--	d, arcs
107	48	1 32 51.0	30 37 30	--	--	u
108	48	1 32 51.1	30 35 10	--	--	u
109	48	1 32 51.1	30 37 40	1.3	10	
110	48	1 32 51.2	30 37 43	0.38	3	
111	37	1 32 51.3	30 51 2	1.1	13	d, isolated
112	48	1 32 51.4	30 39 47	--	--	
113	42	1 32 51.5	30 45 26	1.4	18	
114	48	1 32 51.8	30 37 8	17	54	
115	37	1 32 52.1	30 53 26	4.4	25	
116	37	1 32 52.5	30 49 34	1.2	12	
117	53	1 32 52.6	30 28 49	--	--	d
118	53	1 32 52.6	30 32 47	0.11	--	
119	48	1 32 52.8	30 40 12	--	--	d
120	48	1 32 53.0	30 35 31	12	33	
121	53	1 32 53.1	30 33 41	--	--	
122	37	1 32 53.2	30 48 18	--	--	
123	58	1 32 53.4	30 25 46	--	--	d
124	48	1 32 53.4	30 37 23	--	--	u
125	48	1 32 53.5	30 39 18	7.8	65	
126	48	1 32 53.8	30 37 23	3.6	8	
127	42	1 32 53.8	30 42 37	3.2	39	
128	58	1 32 54.0	30 26 14	--	--	
129	53	1 32 54.2	30 31 41	--	--	d, linear
130	53	1 32 54.2	30 33 52	--	--	d, linear
131	48	1 32 54.3	30 34 59	4.1	19	
132	58	1 32 54.5	30 25 45	2.4	13	
133	42	1 32 54.5	30 41 41	0.18	2	
134	48	1 32 54.6	30 38 40	3.0	25	
135	53	1 32 54.7	30 27 51	--	--	d
136	48	1 32 54.9	30 37 35	--	--	u
137	42	1 32 55.0	30 44 1	--	--	linear
138	53	1 32 55.3	30 28 50	--	--	

139	37	1 32 55.3	30 49 8	6.3	61	
140	53	1 32 55.4	30 30 4	--	--	
141	48	1 32 55.4	30 37 48	6.6	67	d
142	58	1 32 55.5	30 26 52	--	--	d
143	58	1 32 55.6	30 22 50	--	--	d
144	53	1 32 56.1	30 33 27	--	--	bubble
145	48	1 32 56.2	30 34 16	--	--	d, filaments
146	48	1 32 56.4	30 34 48	6.9	32	
147	42	1 32 56.4	30 42 18	--	--	
148	48	1 32 56.5	30 40 20	2.0	12	
149	48	1 32 56.7	30 35 10	1.6	9	
150	53	1 32 56.8	30 27 46	4.6	22	u
151	58	1 32 56.9	30 26 45	--	--	
152	53	1 32 57.1	30 31 29	--	--	
153	48	1 32 57.1	30 36 10	--	--	d, filaments
154	48	1 32 57.2	30 38 26	7.8	82	
155	42	1 32 57.3	30 41 48	1.6	17	
156	42	1 32 57.5	30 44 6	--	--	Includes BCLMP 289, CPSPD 92
157	48	1 32 57.7	30 35 26	--	--	u
158	48	1 32 57.9	30 39 21	--	--	
159	53	1 32 58.1	30 31 53	3.1	13	
160	53	1 32 58.2	30 31 43	--	--	d, linear
161	53	1 32 58.4	30 31 20	--	--	d
162	37	1 32 58.4	30 47 50	0.18	2	
163	58	1 32 58.7	30 22 51	--	--	
164	53	1 32 58.7	30 33 27	--	--	d, 3 parallel lines
165	47,48	1 32 58.7	30 36 36	--	--	
166	42	1 32 58.7	30 44 59	0.55	5	
167	53	1 32 58.8	30 32 38	1.1	6	
168	58	1 32 59.0	30 23 13	--	--	d, arc
169	58	1 32 59.0	30 25 45	--	--	u
170	58	1 32 59.1	30 21 47	--	--	
171	37	1 32 59.1	30 54 28	--	--	
172	58	1 32 59.3	30 23 2	3.3	20	

173	42	1 32 59.5	30 43 36	--	--	
174	53	1 32 59.6	30 31 40	44	227	
175	53	1 32 59.6	30 32 43	--	--	d
176	47,48	1 32 59.7	30 39 57	12	141	
177	47,48	1 32 59.9	30 38 56	16	76	
178	42	1 33 0.5	30 43 59	--	--	
179	53	1 33 0.1	30 30 11	--	--	bubble
180	53	1 33 0.4	30 32 1	9.3	38	
181	53	1 33 0.5	30 33 5	--	--	d
182	42	1 33 0.7	30 41 31	2.2	24	
183	37	1 33 0.7	30 54 32	1.1	12	
184	47	1 33 0.9	30 40 37	--	--	d
185	42	1 33 0.9	30 43 53	2.2	20	
186	53	1 33 1.0	30 28 51	--	--	d
187	47	1 33 1.0	30 39 22	4.4	29	
188	52	1 33 1.1	30 32 41	--	--	u
189	47	1 33 1.3	30 39 47	2.0	16	
190	57	1 33 1.4	30 23 36	2.0	10	
191	57,58	1 33 1.5	30 24 9	--	--	d
192	52	1 33 1.6	30 31 48	--	--	
193	42	1 33 1.8	30 46 50	0.02	2	
194	47	1 33 1.9	30 39 44	3.1	13	
195	47	1 33 2.0	30 39 48	6.0	17	
196	52	1 33 2.6	30 33 48	4.2	17	u
197	52	1 33 2.7	30 32 55	22	76	
198	42	1 33 2.7	30 45 5	4.3	48	
199	52	1 33 3.4	30 33 20	23	73	
200	57	1 33 3.5	30 23 55	--	--	u
201	57	1 33 3.5	30 25 31	1.2	7	
202	52	1 33 3.5	30 30 35	--	--	d, arc
203	52	1 33 3.5	30 32 20	--	--	d
204	52	1 33 3.6	30 28 39	--	--	d
205	52	1 33 3.6	30 30 48	--	--	d, arc
206	52	1 33 4.0	30 30 56	--	--	u
207	42	1 33 4.0	30 41 42	0.66	6	

208	57	1 33 4.1	30 25 46	--	--	d
209	52	1 33 4.3	30 31 42	16	69	
210	52	1 33 4.4	30 27 16	--	--	d
211	52	1 33 4.4	30 31 26	--	--	d, filaments
212	42	1 33 4.4	30 43 49	--	--	d
213	52	1 33 4.6	30 32 34	11	61	
214	52	1 33 4.7	30 30 57	8.5	22	u
215	42	1 33 5.0	30 45 26	--	--	
216	57	1 33 5.1	30 23 38	1.9	11	
217	52	1 33 5.1	30 33 20	2.1	10	
218	52	1 33 5.2	30 32 58	36	161	
219	52	1 33 5.8	30 33 22	--	--	
220	47	1 33 5.9	30 39 10	--	--	d, arc
221	52	1 33 6.0	30 31 1	--	--	u
222	52	1 33 6.2	30 31 30	15	54	
223	42	1 33 6.4	30 46 37	--	--	
224	42	1 33 6.5	30 45 25	--	--	u?
225	52	1 33 6.6	30 31 25	20	27	
226	52	1 33 6.7	30 27 50	--	--	d, arcs
227	52	1 33 6.7	30 31 13	--	--	u
228	52	1 33 6.8	30 28 23	--	--	d
229	52	1 33 6.9	30 31 54	--	--	d, filaments
230	47	1 33 7.0	30 35 22	--	--	
231	42	1 33 7.1	30 46 15	--	--	
232	37	1 33 7.2	30 54 17	--	--	u
233	57	1 33 7.4	30 24 9	--	--	d, linear arc
234	57	1 33 7.4	30 24 49	--	--	
235	42	1 33 7.4	30 42 18	--	--	u
236	52	1 33 7.6	30 31 34	--	--	d
237	42	1 33 7.6	30 46 34	--	--	
238	47	1 33 7.7	30 37 21	--	--	
239	52	1 33 7.8	30 31 15	--	--	d
240	47	1 33 7.8	30 35 16	5.8	37	
241	52	1 33 7.9	30 32 55	--	--	d
242	42	1 33 7.9	30 42 18	--	--	u

243	37	1 33 7.9	30 47 54	0.64	6	
244	52	1 33 8.0	30 33 10	--	--	d
245	42	1 33 8.1	30 45 3	--	--	u
246	37	1 33 8.1	30 48 59	3.1	27	
247	57	1 33 8.5	30 22 16	0.24	12	
248	42	1 33 8.5	30 47 39	0.95	11	
249	52	1 33 8.9	30 29 12	--	--	u
250	41,42	1 33 8.9	30 46 52	4.0	11	
251	57	1 33 9.5	30 26 26	--	--	d, arc
252	52	1 33 9.5	30 29 11	--	--	u
253	47	1 33 9.8	30 37 18	--	--	
255	42	1 33 9.9	30 46 46	--	--	part of giant arc
256	52	1 33 10.1	30 33 10	--	--	d
257	52	1 33 10.2	30 32 6	0.24	5	
258	57	1 33 10.3	30 22 22	--	--	d, arc
260	52	1 33 10.7	30 32 13	0.95	5	
261	47	1 33 10.8	30 38 19	42	125	
262	52	1 33 10.9	30 33 1	--	--	d
263	52	1 33 11.0	30 28 2	--	--	d, arc
264	57	1 33 11.2	30 24 0	--	--	d
265	47	1 33 11.2	30 40 13	--	--	d
266	52,57	1 33 11.5	30 27 2	--	--	arcs
267	47	1 33 11.5	30 39 16	12	35	
268	52	1 33 11.7	30 28 11	--	--	d, arc
269	47	1 33 11.8	30 39 20	12	36	
270	52	1 33 12.1	30 29 12	--	--	d, arcs
271	37	1 33 12.1	30 49 33	1.6	12	
272	41,42	1 33 12.2	30 43 36	--	--	u
273	37	1 33 12.2	30 50 34	5.1	30	dbl
274	47	1 33 12.3	30 40 0	--	--	
275	41,42	1 33 12.4	30 44 6	3.0	24	within large complex
276	41,42	1 33 12.7	30 42 14	--	--	d
277	57	1 33 12.8	30 22 24	2.6	12	
278	52	1 33 12.8	30 32 17	--	--	d, filaments
279	47	1 33 12.8	30 34 22	--	--	d

280	37	1 33 12.8	30 51 10	7.2	53	
281	37	1 33 12.9	30 49 43	2.8	16	
282	37	1 33 12.9	30 50 41	3.6	28	
283	57	1 33 13.0	30 22 55	--	--	d
284	57	1 33 13.1	30 21 16	1.1	6	
285	57	1 33 13.1	30 22 24	6.0	16	
286	41,42	1 33 13.1	30 43 9	3.3	21	
287	52	1 33 13.3	30 30 14	--	--	d, bright arcs
288	47	1 33 13.3	30 39 40	--	--	bubble (or horseshoe)
289	57	1 33 13.4	30 22 40	16	64	
290	41,42	1 33 13.5	30 43 9	--	--	u
291	47	1 33 13.6	30 34 38	0.79	5	
292	41,42	1 33 13.6	30 44 21	21	49	within large complex
293	41,42	1 33 13.7	30 43 15	--	--	u
294	37	1 33 13.7	30 47 50	--	--	d
295	52	1 33 13.8	30 28 4	--	--	u
296	47	1 33 13.8	30 35 55	0.57	4	
297	47	1 33 13.8	30 40 36	--	--	u
298	37	1 33 14.0	30 50 44	0.61	7	
299	37	1 33 14.0	30 51 18	--	--	u
300	37	1 33 14.0	30 52 44	--	--	u
301	52	1 33 14.1	30 33 37	--	--	d
302	47	1 33 14.1	30 34 23	--	--	u
303	41,42	1 33 14.1	30 45 41	4.9	39	
304	52	1 33 14.3	30 32 48	4.4	28	
305	57	1 33 14.4	30 22 32	2.2	12	u
306	37	1 33 14.4	30 51 44	1.3	8	
307	47	1 33 14.5	30 38 54	9.8	33	
308	57	1 33 14.6	30 23 24	--	--	d
309	52,57	1 33 14.6	30 26 59	--	--	d, arc
310	57	1 33 14.8	30 22 22	0.43	3	
311	52	1 33 14.8	30 29 24	--	--	d, arcs
312	37	1 33 14.8	30 54 7	4.8	36	
313	57	1 33 14.9	30 22 29	--	--	
314	52	1 33 14.9	30 27 3	--	--	u

315	47	1 33 14.9	30 35 47	--	--	
316	41,42	1 33 14.9	30 45 59	5.4	37	
317	41,42	1 33 14.9	30 46 47	--	--	u
318	47	1 33 15.0	30 38 45	--	--	d, arc
319	37	1 33 15.0	30 54 11	7.2	56	
320	37	1 33 15.1	30 52 15	--	--	d, linear
321	47	1 33 15.2	30 37 24	2.9	13	
322	47	1 33 15.2	30 39 2	6.2	31	
323	47	1 33 15.2	30 39 25	14	52	2 components
324	41,42	1 33 15.2	30 47 1	7.5	51	
325	52	1 33 15.3	30 31 26	5.8	90	
326	52	1 33 15.3	30 31 59	31	167	
327	47	1 33 15.3	30 36 36	--	--	u
328	47	1 33 15.3	30 36 40	--	--	u
329	47	1 33 15.3	30 37 20	1.8	10	
330	47	1 33 15.4	30 35 31	--	--	d, arc
331	52	1 33 15.5	30 28 26	--	--	d, arc
332	47	1 33 15.5	30 39 47	--	--	u
333	57	1 33 15.6	30 25 49	--	--	
334	52	1 33 15.7	30 31 45	1.5	10	
335	37	1 33 15.7	30 53 23	31	96	
336	37	1 33 15.7	30 54 12	2.2	20	
337	52	1 33 15.8	30 29 52	--	--	
338	47	1 33 15.8	30 35 0	--	--	u
339	47	1 33 15.9	30 36 13	--	--	
340	46,47	1 33 15.9	30 36 57	--	--	d, arc
341	47	1 33 15.9	30 39 12	--	--	
342	52	1 33 16.1	30 32 42	--	--	d
343	47	1 33 16.1	30 38 56	14	61	
344	57	1 33 16.4	30 25 11	--	--	
345	57	1 33 16.5	30 21 38	--	--	d
346	52	1 33 16.5	30 33 17	3.1	12	
347	41,42	1 33 16.5	30 47 20	13	66	
348	52	1 33 16.6	30 30 8	--	--	d, arcs
349	52	1 33 16.6	30 31 28	5.0	24	

350	46,47	1 33 16.6	30 36 15	1.8	11	
351	37	1 33 16.7	30 47 47	25	185	
352	52	1 33 16.8	30 32 5	1.6	10	
353	52	1 33 16.9	30 28 6	--	--	d, plus faint u
354	37	1 33 16.9	30 53 19	6.8	29	
355	57	1 33 17.0	30 22 54	--	--	d
356	52	1 33 17.0	30 32 41	7.0	31	
357	47	1 33 17.0	30 35 17	2.3	16	
358	41,46	1 33 17.0	30 41 28	14	67	
359	57	1 33 17.1	30 23 2	--	--	u
360	47	1 33 17.1	30 39 49	--	--	
361	37	1 33 17.1	30 54 25	8.1	50	
362	52	1 33 17.3	30 33 0	--	--	d
363	41	1 33 17.4	30 47 23	7.6	63	arc
365	46,47	1 33 17.5	30 39 17	--	--	
366	41	1 33 17.6	30 47 0	18	135	
367	37	1 33 17.6	30 52 41	4.2	27	
368	46,47	1 33 17.7	30 40 47	5.0	37	
369	52	1 33 17.8	30 29 2	--	--	d, arc
370	52	1 33 17.9	30 32 10	1.4	9	
371	47	1 33 17.9	30 35 37	6.8	43	
372	52	1 33 18.0	30 33 2	10	38	
373	52	1 33 18.0	30 33 35	--	--	
374	52	1 33 18.2	30 33 25	12	61	
375	57	1 33 18.4	30 26 3	--	--	
376	46,47	1 33 18.4	30 36 24	0.24	1	
377	47	1 33 18.5	30 35 31	--	--	
378	41	1 33 18.6	30 46 46	--	--	bubble
379	37	1 33 18.7	30 53 28	11	61	
380	57	1 33 18.8	30 25 38	--	--	u
381	46,47	1 33 18.9	30 36 37	1.2	7	
382	52	1 33 19.2	30 27 48	--	--	d
383	52	1 33 19.2	30 29 37	--	--	u
384	41	1 33 19.2	30 47 6	0.29	3	
385	46,47	1 33 19.3	30 40 40	--	--	d

386	46,47	1 33 19.4	30 39 24	17	63	
387	37	1 33 19.4	30 50 35	2.0	18	
388	46,47	1 33 19.5	30 39 37	5.1	27	
389	46,47	1 33 19.6	30 36 18	--	--	
390	37	1 33 19.6	30 53 8	--	--	d, linear
391	57	1 33 19.7	30 24 27	--	--	
392	41,46	1 33 19.7	30 42 14	--	--	d
393	52	1 33 19.9	30 27 38	--	--	u
394	46,47	1 33 19.9	30 36 31	0.42	2	
395	46,47	1 33 20.0	30 39 19	4.0	28	
396	47	1 33 20.3	30 34 46	0.48	3	
397	57	1 33 20.4	30 21 24	--	--	u
398	41	1 33 20.4	30 46 35	--	--	u
399	41	1 33 20.5	30 42 27	7.3	66	
400	57	1 33 21.3	30 23 58	3.0	12	
401	46,47	1 33 21.3	30 38 53	2.3	17	
402	36	1 33 21.8	30 50 9	--	--	
403	57	1 33 22.0	30 23 12	--	--	d
404	47	1 33 22.2	30 35 7	--	--	
405	47	1 33 22.4	30 35 42	--	--	d
406	57	1 33 22.7	30 25 10	--	--	
407	52	1 33 22.7	30 30 14	--	--	d
408	47	1 33 22.7	30 35 24	--	--	
409	36	1 33 22.7	30 49 53	1.2	13	
410	57	1 33 22.8	30 23 40	--	--	u
411	41,46	1 33 22.8	30 42 31	--	--	
412	36	1 33 22.9	30 50 5	2.2	20	
413	57	1 33 23.0	30 20 19	--	--	
414	52	1 33 23.0	30 32 58	--	--	
415	41	1 33 23.1	30 42 11	--	--	d
416	57	1 33 23.2	30 23 46	--	--	d
417	36	1 33 23.2	30 49 36	--	--	u
418	36	1 33 23.3	30 50 40	15	133	
419	36	1 33 23.3	30 54 23	--	--	d
420	46,47	1 33 23.4	30 38 38	4.6	24	

421	41	1 33 23.4	30 42 49	--	--	
422	41,46	1 33 23.7	30 44 4	1.6	15	
423	36	1 33 23.7	30 51 7	5.3	48	
424	41	1 33 23.8	30 43 6	--	--	
425	52	1 33 23.9	30 31 51	--	--	on bad columns
426	46,47	1 33 23.9	30 38 39	3.3	23	
427	36	1 33 24.0	30 49 4	3.9	35	
428	36	1 33 24.0	30 53 23	--	--	d
429	46,47	1 33 24.3	30 39 6	12	67	
430	36	1 33 24.3	30 49 44	--	--	d, linear
431	36	1 33 24.4	30 50 42	2.6	28	
432	57	1 33 24.5	30 23 26	--	--	d
433	36	1 33 24.6	30 49 9	1.2	11	
434	41	1 33 24.7	30 44 58	--	--	u
435	46,47	1 33 24.8	30 37 50	4.2	39	
436	36	1 33 24.8	30 50 28	6.8	46	
437	36	1 33 25.0	30 49 42	--	--	d
438	46,47	1 33 25.4	30 38 53	3.3	18	
439	46,47	1 33 25.4	30 39 41	7.5	49	
440	57	1 33 25.5	30 24 59	--	--	
441	36	1 33 25.5	30 48 14	--	--	d
442	46,47	1 33 25.9	30 40 39	--	--	u
443	36	1 33 25.9	30 53 27	--	--	d
444	46,47	1 33 26.0	30 36 56	12	66	
445	46,47	1 33 26.3	30 37 54	4.0	29	
446	41	1 33 26.3	30 42 21	--	--	d
447	46,47	1 33 26.5	30 37 35	8.9	41	
448	46,47	1 33 26.5	30 37 47	14	72	
449	41	1 33 26.9	30 43 41	7.7	55	
450	57	1 33 27.2	30 23 55	3.5	24	u, cluster
451	57	1 33 27.2	30 24 19	--	--	d
452	52	1 33 27.3	30 30 26	--	--	on defect
453	51,52	1 33 27.4	30 33 40	1.7	9	
454	47	1 33 27.5	30 34 19	0.93	5	
455	47	1 33 27.7	30 34 25	--	--	

456	52	1 33 27.8	30 29 31	0.85	5	
457	46,47	1 33 28.0	30 36 48	1.1	7	
458	46,47	1 33 28.0	30 37 5	3.5	21	
459	41	1 33 28.0	30 43 22	29	207	
460	47	1 33 28.1	30 34 43	1.2	5	
461	51,52	1 33 28.5	30 33 11	4.4	20	
462	46,47	1 33 28.5	30 40 41	22	42	
463	46	1 33 28.5	30 41 4	11	51	
464	46,47	1 33 28.6	30 39 59	14	45	
465	41,46	1 33 28.7	30 41 57	7.1	44	
466	41	1 33 28.8	30 43 50	4.6	44	
467	41	1 33 28.8	30 46 11	--	--	d
468	36	1 33 28.8	30 52 54	--	--	d
469	41	1 33 28.9	30 43 29	--	--	d (structured)
470	41	1 33 29.1	30 46 31	0.51	6	
471	57	1 33 29.2	30 23 56	--	--	
472	41	1 33 29.4	30 43 19	--	--	
473	51	1 33 29.8	30 30 30	--	--	
475	51,52	1 33 29.9	30 33 9	--	--	d
476	51	1 33 29.9	30 34 28	--	--	d
477	51,52	1 33 30.0	30 32 34	--	--	u
478	46	1 33 30.2	30 41 9	10	32	
479	41	1 33 30.2	30 44 16	--	--	
480	57	1 33 30.5	30 21 1	--	--	
481	51,52	1 33 30.5	30 33 39	2.3	12	
482	57	1 33 30.6	30 23 56	--	--	
483	51,52	1 33 30.8	30 31 29	--	--	d
484	57	1 33 30.9	30 20 25	3.2	18	
485	41	1 33 31.0	30 45 1	0.46	6	
486	52	1 33 31.1	30 27 32	--	--	
487	51	1 33 31.2	30 30 1	--	--	u
488	51,52	1 33 31.3	30 31 21	--	--	d
489	56,57	1 33 31.5	30 26 16	1.8	9	u
490	51	1 33 31.7	30 30 24	1.9	11	
491	51	1 33 31.7	30 30 57	--	--	

492	41	1 33 31.7	30 45 29	1.5	15	
493	51	1 33 31.8	30 30 29	1.6	5	
494	36	1 33 31.9	30 50 41	--	--	d
495	57	1 33 32.1	30 21 56	2.2	12	
496	56	1 33 32.1	30 28 19	2.2	6	
497	51	1 33 32.1	30 30 15	0.81	5	
498	57	1 33 32.2	30 22 3	0.29	1	
499	46	1 33 32.3	30 37 49	6.5	35	
500	56	1 33 32.5	30 24 42	--	--	
501	56,57	1 33 32.5	30 26 39	--	--	u
502	56	1 33 32.6	30 24 32	--	--	u
503	36	1 33 32.6	30 49 35	1.0	8	
504	36	1 33 32.8	30 50 29	--	--	d
505	36	1 33 32.8	30 50 43	--	--	d
506	56	1 33 33.0	30 24 30	0.33	1	
507	36	1 33 33.0	30 49 6	0.25	3	
508	36	1 33 33.0	30 49 44	4.4	18	
509	51	1 33 33.1	30 30 37	—	—	d
510	46	1 33 33.1	30 38 14	--	--	d
511	36	1 33 33.1	30 49 22	5.2	44	
512	51	1 33 33.3	30 30 7	4.1	15	
513	46	1 33 33.3	30 37 53	6.7	24	
514	46	1 33 33.6	30 39 27	15	53	
515	51	1 33 33.7	30 30 27	--	--	
516	51	1 33 33.8	30 30 17	--	--	
517	51	1 33 33.8	30 34 29	0.95	5	
518	40,41	1 33 33.9	30 47 20	22	77	
519	36	1 33 34.1	30 49 49	--	--	d, linear
520	36	1 33 34.2	30 50 27	20	104	
521	56	1 33 34.3	30 28 25	1.8	5	
522	51	1 33 34.3	30 34 24	2.6	13	
523	46	1 33 34.3	30 37 49	7.2	43	
524	40,41	1 33 34.3	30 44 25	1.6	14	
525	51	1 33 34.4	30 31 23	1.6	11	
526	46	1 33 34.4	30 40 51	70	155	

527	56	1 33 34.5	30 26 20	1.6	9	
528	40,41	1 33 34.7	30 44 39	--	--	u
529	51	1 33 34.8	30 30 14	--	--	d
530	56	1 33 34.9	30 25 37	--	--	
531	51	1 33 34.9	30 35 5	--	--	d
532	40,41	1 33 34.9	30 47 10	7.4	57	
533	51	1 33 35.1	30 31 17	7.5	39	
534	51	1 33 35.4	30 31 35	--	--	d, arc
535	46	1 33 35.4	30 39 33	13	43	
536	51	1 33 35.6	30 30 51	--	--	
537	40,41,46	1 33 35.9	30 42 44	16	62	
538	51	1 33 36.1	30 31 47	7.3	27	
539	46	1 33 36.1	30 39 22	28	87	
540	36	1 33 36.1	30 50 10	--	--	d, linear
541	51	1 33 36.3	30 30 42	--	--	defect?
542	51	1 33 36.4	30 30 57	5.5	24	
543	56	1 33 36.5	30 28 59	--	--	
544	51	1 33 36.5	30 31 54	--	--	d, arc
545	56	1 33 36.6	30 28 49	--	--	d, double arc
546	56	1 33 36.6	30 29 11	--	--	
547	51	1 33 36.6	30 29 57	1.0	5	
548	56	1 33 36.8	30 29 40	--	--	d
549	51	1 33 36.8	30 30 4	13	61	
550	56	1 33 36.9	30 29 26	3.9	14	
551	46	1 33 37.0	30 39 22	--	--	u
552	51	1 33 37.2	30 31 8	--	--	d
553	51	1 33 37.2	30 32 6	2.9	13	
554	51	1 33 37.4	30 30 44	11	54	
555	40,41,46	1 33 37.4	30 42 38	25	120	
556	56	1 33 37.5	30 28 3	1.8	11	
557	51	1 33 38.0	30 31 31	--	--	d
558	51	1 33 38.0	30 31 46	--	--	d, linear (parallel lines)
559	40,41	1 33 38.0	30 45 45	1.7	16	
560	51	1 33 38.2	30 30 52	1.9	10	
561	51	1 33 38.2	30 31 16	4.9	17	

562	56	1 33 38.3	30 28 6	5.3	20	
563	51	1 33 38.7	30 31 24	--	--	d
564	56	1 33 38.9	30 27 28	1.6	12	
565	56	1 33 38.9	30 28 21	--	--	d
566	51	1 33 38.9	30 34 38	--	--	d
567	40,41	1 33 38.9	30 45 34	34	50	
568	56	1 33 39.1	30 28 17	8.4	14	
570	51	1 33 39.2	30 31 39	--	--	d
571	40,41	1 33 39.2	30 45 36	36	84	
572	46	1 33 39.3	30 40 4	17	35	
573	40,41,46	1 33 39.3	30 42 11	--	--	u, two?
574	56	1 33 39.4	30 28 5	1.7	9	
575	46	1 33 39.4	30 38 16	21	43	
576	36	1 33 39.4	30 50 9	1.2	10	
577	46	1 33 39.5	30 37 23	9.8	45	
578	46	1 33 39.6	30 38 19	14	41	
579	56	1 33 39.8	30 28 43	--	--	
580	56	1 33 39.9	30 27 22	--	--	
582	40,41	1 33 40.0	30 44 14	--	--	u
583	51	1 33 40.1	30 34 15	--	--	
584	40,41	1 33 40.1	30 44 16	--	--	u
585	51	1 33 40.5	30 36 1	--	--	d
586	45,46	1 33 40.7	30 39 4	12	27	
587	45,46	1 33 40.8	30 39 10	6.0	24	
588	45,46	1 33 40.8	30 39 12	3.3	18	
590	51	1 33 41.2	30 34 15	16	42	
591	45,46	1 33 41.3	30 40 12	--	--	
592	45,46	1 33 41.5	30 37 20	--	--	
593	51	1 33 41.6	30 35 22	--	--	d
594	45,46	1 33 41.7	30 39 13	--	--	
595	36	1 33 41.7	30 50 23	1.2	11	
596	56	1 33 41.8	30 26 47	--	--	
597	36	1 33 41.8	30 49 24	2.9	26	
598	40	1 33 41.9	30 45 6	16	81	
599	40	1 33 41.9	30 45 15	--	--	linear, u-shaped

600	40	1 33 41.9	30 46 30	--	--	u
601	56	1 33 42.1	30 27 18	5.8	65	
602	45,46	1 33 42.1	30 39 5	--	--	
603	51	1 33 42.3	30 34 18	8.8	48	
604	40	1 33 42.3	30 45 5	12	49	
605	40	1 33 42.4	30 44 55	--	--	linear arc
606	45,46	1 33 42.5	30 40 5	--	--	u
607	44,45	1 34 10.3	30 39 29	--	--	
608	51	1 33 42.6	30 30 9	3.7	34	
609	45,46	1 33 42.6	30 40 10	5.8	38	
610	45,46	1 33 42.8	30 42 8	--	--	u
611	56	1 33 43.1	30 23 14	--	--	
612	51	1 33 43.2	30 31 45	13	22	
613	51	1 33 43.2	30 33 14	16	38	
614	45,46	1 33 43.7	30 38 22	28	70	
615	45,46	1 33 43.7	30 39 28	--	--	d, arc
616	51	1 33 43.8	30 33 14	20	61	
617	56	1 33 43.9	30 26 49	0.78	9	
618	40	1 33 44.0	30 44 12	19	66	
619	45,46	1 33 44.2	30 37 4	--	--	
620	45,46	1 33 44.4	30 41 36	--	--	u
621	45,46	1 33 44.5	30 42 4	--	--	u
622	51	1 33 44.6	30 34 27	2.8	22	
623	40	1 33 44.7	30 44 14	9.4	59	
624	56	1 33 44.8	30 23 41	--	--	
625	45,46	1 33 45.0	30 40 5	8.1	32	
626	45,46	1 33 45.0	30 40 10	23	65	
627	56	1 33 45.1	30 27 37	--	--	u
628	56	1 33 45.4	30 27 41	1.6	13	
629	45,46	1 33 45.5	30 39 42	54	220	
630	45,46	1 33 46.0	30 37 51	13	46	
631	56	1 33 46.2	30 26 53	--	--	u
632	45,46	1 33 46.2	30 41 6	22	86	
633	51	1 33 46.9	30 35 19	--	--	d
634	36	1 33 47.0	30 51 29	4.8	44	

635	45,46	1 33 47.1	30 39 40	36	124	
636	40	1 33 47.2	30 45 19	6.7	44	
637	36	1 33 47.2	30 52 1	3.4	32	
638	51	1 33 47.3	30 34 55	--	--	d
639	40	1 33 47.3	30 45 29	2.6	17	
640	56	1 33 47.4	30 29 40	--	--	d
641	40	1 33 47.4	30 44 44	42	98	
642	40	1 33 47.4	30 44 50	13	44	
643	40, 45,46	1 33 47.5	30 42 54	11	58	
644	40	1 33 47.5	30 44 37	51	120	
645	40	1 33 47.5	30 45 3	52	137	
646	51	1 33 47.6	30 33 54	12	42	
647	51	1 33 47.7	30 30 26	--	--	d
648	40	1 33 47.7	30 44 54	6.3	25	
649	56	1 33 47.8	30 29 12	--	--	
650	51	1 33 48.0	30 35 54	4.2	26	
651	40	1 33 48.0	30 44 59	21	127	
652	40	1 33 48.0	30 45 15	16	87	
653	40,45	1 33 48.1	30 43 24	--	--	linear arc
654	40	1 33 48.3	30 44 34	5.8	26	
655	45	1 33 48.4	30 39 16	2.7	13	
656	56	1 33 48.5	30 24 14	--	--	
657	51	1 33 48.5	30 35 45	--	--	u
658	40	1 33 48.6	30 44 37	--	--	u
659	56	1 33 48.7	30 23 50	--	--	
660	45	1 33 48.9	30 38 4	98	52	
661	56	1 33 49.0	30 23 24	--	--	
662	51	1 33 49.0	30 30 24	--	--	u
663	56	1 33 49.1	30 28 5	--	--	d
664	45	1 33 49.1	30 39 53	--	--	u
665	40	1 33 49.2	30 44 34	9.3	39	
666	36	1 33 49.2	30 52 24	39	254	
667	56	1 33 49.3	30 27 38	--	--	
668	51	1 33 49.3	30 32 4	--	--	u
669	51	1 33 49.3	30 32 26	--	--	u, 2 jets

670		45	1 33 49.3	30 39 50	--	--	u
671		51	1 33 49.4	30 33 25	8.5	33	
672		40	1 33 49.4	30 44 42	--	--	d
673		51	1 33 49.5	30 33 14	--	--	
674		40	1 33 49.5	30 45 42	6.2	40	
675		51	1 33 49.7	30 30 13	--	--	bubble
676		40	1 33 49.9	30 44 8	--	--	u
677		45	1 33 50.0	30 39 50	35	47	
678		51	1 33 50.1	30 33 17	34	65	
679		45	1 33 50.2	30 39 10	17	32	
680		40	1 33 50.2	30 45 24	16	87	
681		40	1 33 50.2	30 45 55	6.7	35	
682		45	1 33 50.4	30 40 39	61	65	
683		56	1 33 50.5	30 28 31	--	--	d
684		45	1 33 50.5	30 38 57	21	71	
685		45	1 33 50.6	30 39 31	--	--	defect on one frame?
686		45	1 33 50.7	30 40 0	47	52	
687		40	1 33 50.7	30 44 49	--	--	linear arc
688		40	1 33 50.7	30 45 28	2.9	15	
689		40	1 33 50.7	30 45 34	2.6	8	
690		51	1 33 50.9	30 30 6	0.46	5	
691		45	1 33 51.0	30 40 36	6.9	25	
692		51	1 33 51.1	30 34 53	--	--	d
693		40	1 33 51.1	30 46 19	0.83	6	
694		56	1 33 51.2	30 27 24	--	--	
695		51	1 33 51.2	30 33 14	7.4	18	
696		40	1 33 51.2	30 45 18	7.7	25	
697		36	1 33 51.2	30 52 46	--	--	d
698		51	1 33 51.3	30 31 23	--	--	d
699		45	1 33 51.3	30 40 33	5.5	21	
700		45	1 33 51.4	30 39 55	32	58	
701		56	1 33 51.5	30 23 38	--	--	
702		56	1 33 51.5	30 28 4	12	116	
703		45	1 33 51.5	30 40 6	71	88	
704		51	1 33 51.7	30 32 59	--	--	u, 2 jets

705	56	1 33 51.8	30 27 36	1.3	13	
706	56	1 33 52.0	30 29 2	1.8	14	
707	51	1 33 52.0	30 34 48	11	38	
708	45	1 33 52.1	30 41 18	8.5	29	
709	45	1 33 52.2	30 40 19	13	25	
711	45	1 33 52.4	30 39 33	--	--	linear (thick)
712	56	1 33 52.6	30 23 39	--	--	
713	45	1 33 52.6	30 38 10	7.6	41	
714	51	1 33 52.8	30 33 12	2.1	12	
715	45	1 33 53.0	30 40 9	--	--	near defect
716	51	1 33 53.3	30 33 21	12	27	
717	51	1 33 53.4	30 33 27	6.9	30	
718	45	1 33 53.6	30 39 9	--	--	linear arc
719	45	1 33 53.6	30 39 24	--	--	linear arc
720	51	1 33 53.7	30 33 22	5.6	15	
721	45	1 33 53.7	30 40 35	36	122	
722	45	1 33 53.9	30 38 33	9.0	35	
723	45	1 33 54.0	30 39 16	110	49	
724	50,51	1 33 54.3	30 32 30	--	--	linear, part of bubble
725	51	1 33 54.3	30 33 32	1.3	6	
726	35	1 33 54.4	30 54 47	3.6	27	
727	50,51	1 33 54.6	30 36 4	--	--	u
728	45	1 33 54.6	30 37 57	--	--	
729	45	1 33 54.7	30 37 27	--	--	defect?
730	45	1 33 54.8	30 37 40	--	--	
731	45	1 33 54.8	30 40 9	--	--	
732	45	1 33 54.8	30 41 33	1.4	8	
733	39,40	1 33 54.9	30 45 4	21	62	
734	35	1 33 54.9	30 53 35	--	--	
735	45	1 33 55.0	30 40 44	13	92	
736	45	1 33 55.1	30 41 26	2.7	15	
737	39,40	1 33 55.1	30 45 44	96	147	
738	45	1 33 55.3	30 37 40	--	--	
739	45	1 33 55.4	30 40 8	11	62	
740	45	1 33 55.4	30 40 21	--	--	

741	35	1 33 55.4	30 54 13	11	87	
742	55,56	1 33 55.6	30 26 9	--	--	
743	45	1 33 55.6	30 41 27	1.4	10	
744	35	1 33 55.6	30 54 25	0.82	8	
745	50,51	1 33 55.8	30 36 42	--	--	d, linear
746	39,40	1 33 55.8	30 45 10	35	32	
747	55,56	1 33 55.9	30 25 38	1.9	41	
748	56	1 33 55.9	30 28 39	--	--	
749	45	1 33 56.3	30 40 6	4.2	26	
750	39	1 33 56.3	30 49 26	0.87	6	
751	39,40	1 33 56.4	30 45 47	2.8	12	
752	35	1 33 56.4	30 55 32	0.61	7	
753	45	1 33 56.5	30 40 18	7.2	66	
754	39,40	1 33 56.6	30 45 40	5.8	31	
755	45	1 33 56.8	30 38 51	--	--	
756	50,51	1 33 56.9	30 31 34	0.44	3	
757	35	1 33 56.9	30 54 10	2.6	9	
758	50,51	1 33 57.0	30 31 20	4.4	23	
759	45	1 33 57.4	30 41 55	6.0	54	
760	39	1 33 57.4	30 49 33	1.4	14	
761	45	1 33 57.5	30 38 57	4.5	31	
762	55,56	1 33 57.6	30 26 13	--	--	
763	55,56	1 33 57.6	30 29 48	1.2	13	
764	45	1 33 57.6	30 41 5	7.2	35	
765	55,56	1 33 57.7	30 29 37	0.73	5	
766	50,51	1 33 57.7	30 35 38	--	--	d, complex
767	39,40	1 33 57.9	30 47 47	12	52	
768	50	1 33 58.0	30 33 45	--	-	d, knotty
769	55,56	1 33 58.1	30 28 44	--	-	u
770	45	1 33 58.2	30 38 56	12	67	
771	45	1 33 58.3	30 41 17	--	--	dbl
772	39	1 33 58.4	30 49 35	0.75	8	
773	35	1 33 58.4	30 55 2	6.8	40	
774	35	1 33 58.5	30 52 11	5.1	51	
775	55,56	1 33 58.6	30 23 9	--	--	u

776	50	1 33 58.6	30 34 56	36	96	
111	45	1 33 58.6	30 41 10	58	98	
778	39,40	1 33 58.7	30 46 20	2.0	11	
779	50	1 33 58.8	30 30 17	--	--	double bubble
780	45	1 33 58.8	30 39 52	12	31	
781	50	1 33 58.9	30 33 21	15	49	
782	45	1 33 58.9	30 41 36	30	43	
783	50	1 33 59.0	30 31 42	--	--	d, linear
784	50	1 33 59.2	30 36 13	11	37	
785	45	1 33 59.2	30 41 13	2.9	12	
786	39	1 33 59.3	30 49 10	1.3	8	
787	50	1 33 59.4	30 32 5	25	69	
788	50	1 33 59.4	30 36 19	12	48	
789	45	1 33 59.4	30 40 30	22	118	
790	45	1 33 59.4	30 41 19	1.8	9	
791	39	1 33 59.4	30 49 32	5.7	38	
792	55,56	1 33 59.5	30 27 25	0.38	4	
793	35	1 33 59.6	30 53 20	--	--	u
794	45	1 33 59.7	30 39 23	10	42	
795	35	1 33 59.7	30 52 11	7.6	79	
796	45	1 33 59.8	30 40 25	1.4	7	
797	45	1 33 59.9	30 40 18	2.6	29	dbl
798	39	1 33 59.9	30 49 14	0.77	5	
799	45	1 34 0.0	30 39 37	11	61	
800	50	1 34 0.1	30 33 2	--	--	d, linear
801	55,56	1 34 0.2	30 27 25	--	--	
802	45	1 34 0.2	30 37 14	--	--	d, filaments
803	56	1 34 0.3	30 23 19	0.80	16	
804	45	1 34 0.3	30 39 23	8.1	39	
805	39,40	1 34 0.3	30 46 5	0.78	5	
806	55,56	1 34 0.4	30 28 39	0.28	2	
807	39,40	1 34 0.5	30 49 1	0.85	6	
808	39	1 34 0.5	30 50 39	1.5	16	
809	35	1 34 0.5	30 53 12	8.3	92	
810	55,56	1 34 0.6	30 24 51	--	--	

811	50	1 34 0.6	30 35 3	12	51	
812	39	1 34 0.7	30 47 25	2.3	9	
813	39,40	1 34 0.8	30 46 12	6.5	40	
814	35	1 34 0.8	30 52 40	0.93	8	
815	39,40	1 34 0.9	30 48 45	2.5	20	
816	39	1 34 0.9	30 49 14	0.74	6	
817	35	1 34 0.9	30 51 57	8.1	91	
818	35	1 34 1.0	30 53 47	5.3	55	
819	50	1 34 1.1	30 32 43	14	77	
820	39	1 34 1.1	30 50 24	3.6	9	
821	39	1 34 1.2	30 49 27	1.1	10	
822	35	1 34 1.3	30 52 28	--	--	u
823	40,45	1 34 1.4	30 43 37	2.8	14	
824	35	1 34 1.6	30 52 32	--	--	u
825	50	1 34 1.8	30 33 39	--	--	d
826	39	1 34 1.8	30 49 18	0.19	2	
827	35	1 34 1.8	30 52 42	17	94	
828	55,56	1 34 2.0	30 28 32	2.7	28	
829	35	1 34 2.0	30 52 34	--	--	u
830	39	1 34 2.1	30 50 40	0.64	4	
831	55,56	1 34 2.4	30 28 17	0.57	5	
832	39,40	1 34 2.5	30 48 36	2.0	8	
833	50	1 34 2.9	30 32 51	0.63	7	
834	50	1 34 2.9	30 33 57	11	82	
835	55	1 34 3.0	30 28 48	2.9	22	
836	45	1 34 3.0	30 39 20	--	--	u
837	55	1 34 3.1	30 27 55	--	--	
838	35	1 34 3.1	30 52 31	--	--	u
839	39,40	1 34 3.2	30 46 27	4.3	23	
840	50	1 34 3.4	30 35 45	4.8	30	
841	45	1 34 3.4	30 39 13	--	--	u
842	40,45	1 34 3.4	30 43 30	2.5	22	
843	39,40,45	1 34 3.4	30 43 48	3.2	25	
844	39,40	1 34 3.5	30 46 39	15	83	
845	45	1 34 3.6	30 38 14	--	--	d

846	39,40	1 34 3.6	30 45 56	--	--	u
847	35	1 34 3.6	30 52 37	--	--	u
848	50	1 34 3.7	30 33 28	16	124	
849	40,45	1 34 3.7	30 42 45	5.5	50	
850	44,45	1 34 3.9	30 39 28	--	--	d
851	55	1 34 4.0	30 24 44	--	--	d
852	55	1 34 4.1	30 27 22	2.8	24	u
853	50	1 34 4.3	30 30 46	--	--	d
854	45	1 34 4.3	30 37 45	--	--	d, filaments
855	44,45	1 34 4.3	30 42 0	--	--	half-ring
856	39	1 34 4.3	30 45 12	0.88	8	
857	44,45	1 34 4.4	30 39 28	--	--	d
858	39	1 34 4.5	30 49 21	1.3	15	
859	44,45	1 34 4.6	30 41 11	11	35	
860	35	1 34 4.7	30 53 25	1.3	9	
861	44,45	1 34 4.8	30 39 20	--	--	d
862	35	1 34 4.9	30 51 54	7.4	72	
863	35	1 34 4.9	30 54 2	0.56	6	
864	50	1 34 5.2	30 35 22	1.6	15	
865	39	1 34 5.2	30 46 14	--	--	u
866	39	1 34 5.3	30 47 36	28	108	
867	55	1 34 5.5	30 30 6	--	--	
868	35	1 34 5.6	30 52 1	--	--	u
869	55	1 34 6.0	30 24 52	--	--	u
870	39	1 34 6.1	30 48 24	0.71	3	
871	35	1 34 6.1	30 52 25	38	399	
872	44,45	1 34 6.2	30 39 15	--	--	u
873	35	1 34 6.3	30 52 9	--	--	u
874	55	1 34 6.4	30 28 45	--	--	
875	44,45	1 34 6.4	30 37 24	--	--	d
876	39	1 34 6.4	30 47 53	8.8	24	
877	39	1 34 6.4	30 50 40	0.94	7	
878	55	1 34 6.5	30 23 44	--	--	d, linear
879	55	1 34 6.5	30 28 1	--	--	
880	50	1 34 6.5	30 35 54	--	--	d, arc

881	55	1 34 6.6	30 24 53	--	--	
882	55	1 34 6.6	30 26 33	9.3	73	
883	44,45	1 34 6.6	30 42 5	8.3	41	
884	39	1 34 6.6	30 48 20	1.2	5	
885	55	1 34 7.0	30 25 14	--	--	
886	50	1 34 7.0	30 34 9	--	--	d, linear
887	35	1 34 7.0	30 54 30	6.5	38	
888	50	1 34 7.1	30 33 55	--	--	d
889	50	1 34 7.1	30 35 20	1.9	14	
890	44,45	1 34 7.2	30 42 14	--	--	
891	44,45,50	1 34 7.3	30 37 3	--	--	
892	50	1 34 7.7	30 34 44	--	--	d, arc
893	55	1 34 7.9	30 29 22	0.33	3	
894	55	1 34 8.0	30 29 4	--	--	
895	44,45	1 34 8.0	30 38 47	--	--	d, filament
896	44,45	1 34 8.0	30 42 49	8.9	73	
897	55	1 34 8.1	30 25 42	0.82	10	
898	44,45	1 34 8.1	30 41 56	9.1	53	
899	44,45	1 34 8.3	30 38 14	--	--	
900	55	1 34 8.4	30 25 35	--	--	u
901	44,45	1 34 8.4	30 43 1	6.2	33	
902	35	1 34 8.4	30 53 25	--	--	
903	35	1 34 8.5	30 52 38	1.9	17	
904	44,45	1 34 8.6	30 41 47	7.9	33	
905	44,45	1 34 8.6	30 42 7	--	--	bubble
906	35	1 34 8.7	30 53 11	5.6	45	
907	39	1 34 8.8	30 49 30	--	--	
908	35	1 34 8.8	30 52 57	1.7	14	
909	35	1 34 8.8	30 53 51	--	--	d
910	44,45	1 34 9.0	30 42 53	4.1	30	
911	44,45	1 34 9.1	30 41 47	2.9	19	
912	44,45	1 34 9.1	30 42 45	6.2	33	
913	39	1 34 9.1	30 49 4	0.81	4	
914	55	1 34 9.2	30 23 33	--	--	d, linear
915	55	1 34 9.3	30 26 14	--	--	u

916	39	1 34 9.3	30 49 49	0.73	6	
917	39	1 34 9.5	30 47 34	0.94	7	
918	44,45	1 34 9.6	30 39 53	13	58	
919	55	1 34 9.9	30 23 23	--	--	u
920	55	1 34 9.9	30 25 33	--	--	double nucleus
921	35	1 34 9.9	30 52 53	1.3	13	
922	39	1 34 10.0	30 47 28	1.4	10	
923	55	1 34 10.1	30 23 14	2.3	27	
924	44,45,50	1 34 10.1	30 37 5	25	69	
925	35	1 34 10.1	30 52 44	0.60	6	
926	45	1 34 10.3	30 37 33	--	--	u
927	39	1 34 10.3	30 44 50	--	--	u
928	35	1 34 10.4	30 52 52	0.63	7	
929	55	1 34 10.5	30 25 30	0.60	4	
930	55	1 34 10.6	30 25 21	--	--	u
931	50	1 34 10.6	30 32 50	--	--	d, circular (bubble?)
932	55	1 34 10.7	30 25 35	3.4	13	u
933	55	1 34 10.7	30 25 46	9.0	37	u
934	50	1 34 10.7	30 31 14	3.5	19	
935	39	1 34 10.7	30 44 50	1.8	10	
936	55	1 34 10.8	30 25 38	4.3	20	u
937	50	1 34 10.9	30 34 3	8.0	42	
938	50	1 34 11.0	30 32 59	--	--	d
939	44,45	1 34 11.0	30 38 29	--	--	d
940	44,45	1 34 11.1	30 37 18	--	--	d
941	39	1 34 11.1	30 47 32	2.2	16	
942	39	1 34 11.1	30 49 47	0.99	8	
943	39	1 34 11.1	30 50 35	0.97	9	
944	55	1 34 11.2	30 25 35	--	--	superimposed star?
945	55	1 34 11.2	30 25 55	10	69	
946	55	1 34 11.3	30 24 14	--	--	
947	44,45	1 34 11.4	30 39 23	--	--	d
948	44,45,50	1 34 11.6	30 37 3	--	--	d
949	55	1 34 11.7	30 25 50	1.6	13	
950	55	1 34 11.7	30 26 26	0.33	3	

951	39	1 34 11.7	30 46 59	--	--	d
952	50	1 34 11.8	30 33 59	25	125	
953	44,45,50	1 34 11.8	30 37 5	4.3	14	
954	44,45	1 34 11.8	30 37 23	7.0	43	
955	44,45	1 34 12.0	30 38 22	4.3	30	
956	44,45	1 34 12.0	30 39 8	16	37	
957	39	1 34 12.0	30 44 58	--	--	u
958	55	1 34 12.1	30 26 13	0.35	2	
959	55	1 34 12.1	30 27 16	--	--	
960	55	1 34 12.3	30 26 16	1.5	9	
961	55	1 34 12.3	30 29 35	--	--	u
962	50	1 34 12.3	30 36 1	--	--	d, linear
963	44,45	1 34 12.3	30 37 26	--	--	d
964	35	1 34 12.3	30 51 45	190	1537	
965	50	1 34 12.6	30 34 4	--	--	d, linear
966	39	1 34 12.7	30 47 3	8.0	19	
967	55	1 34 12.8	30 23 21	5.1	57	
968	55	1 34 12.8	30 26 7	--	--	
969	39	1 34 12.8	30 47 15	1.9	10	
970	35	1 34 12.8	30 53 5	0.84	8	
971	55	1 34 13.0	30 29 55	--	--	u
972	50	1 34 13.0	30 31 39	--	--	d
973	50	1 34 13.0	30 32 39	--	--	d
974	39	1 34 13.0	30 47 17	1.7	9	
975	55	1 34 13.2	30 26 55	0.72	7	
976	55	1 34 13.3	30 27 7	--	--	d, linear
977	39	1 34 13.3	30 44 58	--	--	u
978	55	1 34 13.4	30 26 1	--	--	
979	55	1 34 13.6	30 25 38	1.7	15	
980	50	1 34 13.7	30 30 36	2.5	14	
981	39	1 34 13.7	30 45 53	--	--	d
982	55	1 34 13.9	30 29 10	0.94	10	
983	55	1 34 14.1	30 24 51	--	--	d, linear
984	50	1 34 14.1	30 30 13	0.59	6	
985	39	1 34 14.1	30 46 14	--	--	d

986	55	1 34 14.2	30 30 6	--	--	u
987	55	1 34 14.3	30 27 39	--	--	
988	44	1 34 14.3	30 38 18	--	--	
989	39	1 34 14.3	30 50 2	2.8	30	
990	55	1 34 14.5	30 29 52	--	--	u
991	55	1 34 14.6	30 29 9	--	--	
992	50	1 34 14.6	30 31 47	--	--	bubble with point source
993	55	1 34 14.8	30 28 48	0.83	9	
994	44	1 34 14.8	30 40 4	--	--	
995	50	1 34 14.9	30 35 49	2.7	17	u
996	50	1 34 14.9	30 36 19	--	--	d, linear
997	55	1 34 15.1	30 26 47	0.38	4	
998	55	1 34 15.1	30 28 43	--	--	u
999	39	1 34 15.1	30 44 55	--	--	u
1000	44	1 34 15.3	30 38 43	--	--	
1001	44	1 34 15.3	30 41 7	19	154	
1002	50	1 34 15.4	30 32 48	--	--	d, linear
1003	44	1 34 15.5	30 37 35	--	--	
1004	55	1 34 15.6	30 24 51	--	--	u
1005	55	1 34 15.8	30 29 42	--	--	
1006	44	1 34 15.8	30 40 51	0.34	3	
1007	44	1 34 16.0	30 39 3	--	--	u
1008	44	1 34 16.0	30 40 47	0.44	4	
1009	50	1 34 16.1	30 30 15	1.5	11	
1010	44	1 34 16.1	30 38 43	--	--	u
1011	44	1 34 16.1	30 39 45	--	--	
1012	44	1 34 16.2	30 38 26	--	--	
1013	44	1 34 16.4	30 41 7	1.5	8	
1014	50	1 34 17.3	30 34 58	--	--	d, linear, kinked
1015	55	1 34 17.6	30 25 20	--	--	u
1016	44,50	1 34 17.6	30 37 4	51	89	
1017	35	1 34 17.6	30 56 21	3.7	46	
1018	50	1 34 17.9	30 35 31	--	--	defect?
1019	50	1 34 17.9	30 35 46	2.0	11	

1020		44	1 34 17.9	30 38 0	--	--	d, large complex of filaments
1021		35	1 34 17.9	30 52 45	13	30	
1022		55	1 34 18.0	30 26 57	0.64	5	
1023		55	1 34 18.0	30 29 32	--	--	d
1024		44	1 34 18.1	30 41 36	--	--	
1025		55	1 34 18.2	30 28 3	--	--	d
1026		55	1 34 18.5	30 23 11	--	--	u
1027		39	1 34 18.5	30 47 53	23	213	
1028		39	1 34 18.5	30 48 18	6.9	18	
1029		55	1 34 18.6	30 28 44	0.77	8	
1030		55	1 34 18.7	30 26 51	--	--	u
1031		35	1 34 18.8	30 53 42	--	--	d
1032		35	1 34 18.8	30 55 12	0.72	4	
1033		55	1 34 18.9	30 25 13	--	--	u
1034		35	1 34 19.0	30 55 44	--	--	d
1035		55	1 34 19.1	30 25 21	--	--	u
1036		44	1 34 19.1	30 40 1	--	--	u
1037		35	1 34 19.4	30 52 31	--	--	d
1038		55	1 34 19.5	30 29 1	--	--	d
1039		50	1 34 19.5	30 32 59	9.1	55	
1040		35	1 34 19.5	30 56 44	--	--	d, linear
1041		39	1 34 19.6	30 46 25	2.8	21	
1042		55	1 34 19.8	30 25 14	--	--	u
1043		55	1 34 19.9	30 25 3	--	--	u
1044		50	1 34 20.0	30 34 39	4.4	18	
1045		44	1 34 20.0	30 40 8	--	--	
1046		55	1 34 20.2	30 26 37	--	--	u
1047		50	1 34 20.2	30 35 45	--	--	d, linear
1048		55	1 34 20.6	30 29 28	--	--	d
1049		50	1 34 20.6	30 33 3	3.2	20	
1050		50	1 34 20.7	30 30 37	--	--	u, double
1051		50	1 34 20.8	30 32 28	2.3	22	
1052		35	1 34 21.0	30 56 11	1.6	13	
1053		50	1 34 21.2	30 32 40	--	--	u, multiple
1054		44	1 34 21.2	30 38 17	--	--	d, arc

1055	44	1 34 21.2	30 43 34	26	59		
1056	55	1 34 21.4	30 23 24	--	--		
1057	55	1 34 21.4	30 29 25	--	--		
1058	44	1 34 21.4	30 37 39	--	--		
1059	39	1 34 21.4	30 46 46	4.7	40		
1060	39	1 34 21.5	30 44 59	--	--	d	
1061	35	1 34 21.6	30 56 59	--	--		
1062	50	1 34 21.8	30 31 53	3.9	38		
1063	39	1 34 21.8	30 44 43	4.4	41		
1064	39	1 34 22.0	30 48 13	1.4	7		
1065	35	1 34 22.3	30 56 28	3.1	34		
1066	55	1 34 22.4	30 29 31	0.20	2		
1067	44	1 34 22.4	30 39 59	1.7	8		
1068	39	1 34 22.4	30 49 52	8.6	74		
1069	50	1 34 22.7	30 34 8	21	69		
1070	50	1 34 22.7	30 35 13	15	45		
1071	50	1 34 22.9	30 31 48	1.3	11		
1072	39	1 34 22.9	30 46 29	12	79		
1073	39	1 34 23.2	30 46 23	2.5	12		
1074	34,35	1 34 23.2	30 56 50	5.6	57		
1075	34,35	1 34 23.4	30 54 20	0.96	7		
1076	55	1 34 23.5	30 29 21	--	--		
1077	55	1 34 23.6	30 28 18	0.35	3		
1078	44	1 34 23.6	30 39 13	--	--		
1079	44	1 34 23.7	30 39 3	--	--	u	
1080	55	1 34 24.1	30 27 52	--	--	u	
1081	50	1 34 24.1	30 34 30	1.2	9		
1082	34,35	1 34 24.2	30 56 50	2.8	14		
1083	38,39	1 34 24.3	30 48 43	1.1	8		
1084	38,39	1 34 24.6	30 48 45	1.6	12		
1085	34,35	1 34 24.8	30 56 52	2.5	20		
1086	55	1 34 24.9	30 28 40	--	--	u	
1087	44	1 34 25.2	30 36 53	--	--		
1088	44	1 34 25.2	30 39 37	--	--		
1089	44	1 34 25.3	30 40 7	2.5	9		

1090	44	1 34 25.5	30 38 26	--	--		
1091	34,35	1 34 25.6	30 56 57	--	--		
1092	49	1 34 25.7	30 33 12	0.96	11	u	
1093	54	1 34 26.0	30 28 57	0.91	9		
1094	49	1 34 26.0	30 34 21	0.44	6		
1095	44	1 34 26.0	30 37 19	--	--		
1096	38,39	1 34 26.1	30 48 58	14	36		
1097	54	1 34 26.5	30 24 14	--	--		
1098	38,39	1 34 26.9	30 44 44	--	--		
1099	34	1 34 27.0	30 55 53	--	--	d, s-shaped	
1100	49	1 34 27.1	30 36 41	2.6	28		
1101	49	1 34 27.2	30 34 13	--	--		
1102	38	1 34 27.7	30 49 12	--	--	u	
1103	34	1 34 27.8	30 57 6	3.4	19		
1104	49	1 34 28.4	30 34 50	0.68	7		
1105	38	1 34 28.4	30 49 29	1.4	16		
1106	44	1 34 28.8	30 38 1	--	--		
1107	34	1 34 28.9	30 56 59	64	367		
1108	44	1 34 29.1	30 38 22	--	--		
1109	44	1 34 29.4	30 40 55	400	2395	incorporates BCLMP 734 and 735	
1110	38	1 34 29.4	30 48 50	--	--	bubble	
1111	54	1 34 29.6	30 29 37	--	--	u	
1112	49	1 34 29.7	30 34 9	1.4	14		
1113	49	1 34 30.0	30 33 44	0.48	3		
1114	44	1 34 30.0	30 37 41	--	--		
1115	49	1 34 30.4	30 35 29	--	--	u	
1116	49	1 34 30.5	30 36 33	--	--	u	
1117	44	1 34 30.5	30 38 24	--	--	u	
1118	44	1 34 30.6	30 39 15	--	--		
1119	44	1 34 30.8	30 37 42	--	--		
1120	38	1 34 30.8	30 49 40	--	--	u	
1121	54	1 34 31.2	30 24 6	--	--		
1122	38	1 34 31.2	30 48 43	--	--	d	
1123	49	1 34 31.3	30 34 13	2.2	21		

1124	49	1 34 31.3	30 36 2	--	--	d, arc
1125	49	1 34 31.9	30 34 12	--	--	
1126	38	1 34 31.9	30 45 2	12	100	
1127	38	1 34 31.9	30 49 36	--	--	d, linear
1128	49	1 34 32.1	30 35 1	--	--	bubble
1129	54	1 34 32.2	30 28 49	--	--	
1130	34	1 34 32.3	30 52 56	--	--	d
1131	44	1 34 32.4	30 38 0	--	--	d
1132	38	1 34 32.7	30 44 42	7.3	50	
1133	44	1 34 32.8	30 40 53	2.8	27	
1134	44	1 34 32.9	30 38 39	--	--	d
1135	38	1 34 33.1	30 44 42	5.6	38	
1136	49	1 34 33.3	30 34 55	6.6	49	
1137	49	1 34 33.3	30 35 15	--	--	u
1138	49	1 34 33.3	30 35 51	7.2	38	
1139	34	1 34 33.3	30 57 14	--	--	d, structured
1140	44	1 34 33.4	30 39 21	--	--	u
1141	38	1 34 34.4	30 45 21	7.0	54	
1142	44	1 34 34.6	30 42 8	--	--	bubble
1143	38	1 34 34.7	30 45 48	12	68	
1144	44	1 34 34.9	30 38 39	--	--	
1145	38	1 34 34.9	30 45 44	7.4	62	
1146	34	1 34 34.9	30 52 9	0.49	5	
1147	38	1 34 35.1	30 45 16	16	104	
1148	38	1 34 35.1	30 45 32	14	115	
1149	38	1 34 35.4	30 44 59	9.1	56	
1150	38	1 34 35.4	30 45 7	22	127	
1151	38	1 34 35.5	30 46 2	--	--	
1152	34	1 34 35.6	30 52 5	2.1	17	
1153	34	1 34 35.6	30 52 11	3.1	19	
1154	44	1 34 35.7	30 40 22	3.8	23	
1155	44	1 34 35.9	30 40 2	4.1	16	
1156	38	1 34 35.9	30 44 52	19	87	
1157	38	1 34 35.9	30 45 56	--	--	image defect?
1158	44	1 34 36.0	30 37 20	--	--	

1159	44	1 34 36.0	30 38 56	--	--	
1160	38	1 34 36.5	30 45 14	6.7	44	
1161	38	1 34 36.6	30 45 43	4.6	34	
1162	43,44	1 34 36.7	30 42 51	--	--	
1163	38	1 34 36.8	30 45 52	--	--	image defect?
1164	43	1 34 37.0	30 42 15	--	--	bubble
1165	38	1 34 37.0	30 44 51	2.7	19	
1166	34	1 34 37.0	30 55 59	--	--	d, arc
1167	38	1 34 37.1	30 45 26	2.2	25	
1168	38	1 34 37.3	30 48 0	0.44	3	u
1169	38	1 34 37.4	30 44 50	2.5	19	
1170	38	1 34 37.4	30 48 10	--	--	u
1171	34	1 34 37.4	30 54 35	--	--	
1172	38	1 34 37.5	30 48 13	1.1	6	
1173	34	1 34 37.6	30 56 28	--	--	d, linear
1174	38	1 34 37.7	30 44 57	--	--	d
1175	49	1 34 37.8	30 35 16	--	--	bad column
1176	34	1 34 37.8	30 53 4	2.0	24	
1177	49	1 34 38.0	30 31 19	--	--	next to bad column
1178	49	1 34 38.0	30 32 59	--	--	next to bad column
1179	49	1 34 38.1	30 31 24	--	--	next to bad column
1180	49	1 34 38.3	30 32 50	14	36	u
1181	38	1 34 38.4	30 46 58	3.9	13	
1182	38	1 34 38.6	30 50 4	--	--	
1183	38	1 34 38.8	30 46 20	13	71	
1184	34	1 34 38.8	30 55 45	5.1	48	
1185	49	1 34 39.0	30 35 52	0.93	10	
1186	49	1 34 39.1	30 33 43	--	--	
1187	49	1 34 39.2	30 31 12	--	--	u
1188	38	1 34 39.4	30 44 46	6.0	40	
1189	54	1 34 39.5	30 26 48	--	--	d
1190	38	1 34 39.6	30 47 49	110	873	
1191	49	1 34 39.7	30 31 13	--	--	u
1192	38	1 34 39.8	30 44 46	10	56	
1193	34	1 34 39.8	30 52 53	3.5	30	

1194		38	1 34 39.9	30 44 40	--	--	d
1195		38	1 34 40.0	30 44 49	25	128	
1196		49	1 34 40.1	30 35 49	0.83	8	
1197		34	1 34 40.1	30 55 46	--	--	d
1198		34	1 34 40.4	30 52 50			
1199		43	1 34 40.5	30 39 1	--	--	
1200		54	1 34 40.6	30 26 53	2.5	24	
1201		49	1 34 40.6	30 36 13	0.11	1	
1202		34	1 34 40.6	30 52 6	2.1	7	
1203		54	1 34 40.8	30 27 10	--	--	d
1204		38	1 34 40.8	30 46 10	0.58	4	
1205		49	1 34 41.0	30 30 20	--	--	u
1206		49	1 34 41.1	30 31 1	--	--	u
1207		54	1 34 41.2	30 28 9	--	--	
1208		54	1 34 41.6	30 25 58	--	--	
1209		38	1 34 41.6	30 47 44	6.6	58	
1210		49	1 34 41.7	30 31 59	--	--	d
1211		49	1 34 41.7	30 32 13	4.6	26	
1212		34	1 34 41.8	30 56 3	24	46	
1213		49	1 34 41.9	30 32 23	--	--	u
1214		49	1 34 42.0	30 32 57	--	--	u
1215		38	1 34 42.0	30 47 6	3.5	17	
1216		43	1 34 42.5	30 40 47	3.7	30	
1217		43	1 34 42.7	30 40 38	15	34	
1218		38	1 34 42.7	30 46 54	--	--	u
1219		54	1 34 42.8	30 26 35	--	--	d
1220		43	1 34 42.9	30 40 30	0.96	8	
1221		54	1 34 43.1	30 26 25	5.8	22	
1222		54	1 34 43.4	30 26 31	1.2	13	
1223		34	1 34 43.5	30 51 37	8.6	32	
1224		38	1 34 44.2	30 46 14	--	--	
1225		38	1 34 44.5	30 49 36	3.7	36	
1226		43	1 34 44.8	30 43 22	4.2	15	
1227		49	1 34 44.9	30 33 31	--	--	
1228		49	1 34 45.3	30 35 38	--	--	

1229	43	1 34 45.4	30 38 32	--	--	d, arcs
1230	34	1 34 46.0	30 54 47	2.8	21	
1231	38	1 34 46.1	30 44 39	--	--	u
1232	34	1 34 46.3	30 54 50	3.8	14	u
1233	49	1 34 46.6	30 35 44	1.0	12	
1234	49	1 34 46.9	30 36 9	0.93	8	
1235	43	1 34 47.0	30 37 42	--	--	
1236	49	1 34 47.1	30 34 23	5.0	52	
1237	43	1 34 47.1	30 37 30	--	--	
1238	34	1 34 47.2	30 54 54	2.2	24	
1239	38	1 34 48.1	30 50 15	0.69	8	
1240	54	1 34 48.6	30 28 26	51	369	
1241	43	1 34 49.0	30 37 25	--	--	
1242	49	1 34 50.5	30 33 4	--	--	bad column
1243	49	1 34 51.2	30 32 46	--	--	bad column
1244	49	1 34 51.2	30 32 52	--	--	bad column
1245	49	1 34 51.3	30 33 7	--	--	bad column
1246	34	1 34 51.9	30 54 32	1.3	11	
1247	38,43	1 34 53.5	30 43 56	1.4	9	
1248	34	1 34 53.9	30 54 5	0.19	2	
1249	43	1 34 54.2	30 40 18	1.8	16	
1250	38	1 34 54.3	30 50 14	--	--	
1251	49	1 34 54.9	30 34 48	16	29	u
1252	49	1 34 55.1	30 31 39	--	--	
1253	43	1 34 58.4	30 43 2	--	--	d
1254	43	1 34 59.0	30 42 7	52	481	
1255	43	1 34 59.1	30 42 24	--	--	d
1256	43	1 34 59.8	30 40 3	--	--	d
1257	43	1 35 0.1	30 42 27	0.65	3	
1258	43	1 35 0.3	30 41 55	3.3	28	
1259	43	1 35 0.7	30 40 38	--	--	d
1260	43	1 35 0.9	30 40 9	--	--	d
1261	43	1 35 1.1	30 41 15	2.6	9	
1262	43	1 35 1.4	30 42 20	0.34	3	
1263	43	1 35 2.9	30 43 54	3.1	14	

1264	43	1 35 4.3	30 40 13	--	--	d
1265	43	1 35 4.3	30 41 29	3.3	19	
1266	43	1 35 4.5	30 41 7	4.0	30	
1267	43	1 35 4.7	30 41 26	4.8	22	
1268	58	1 32 39.5	30 21 58	--	--	
1269	58	1 32 40.2	30 22 3	--	--	
1270	57	1 33 10.5	30 22 42	--	--	
1273	48	1 32 55.3	30 38 59	--	--	
1274	48	1 32 55.7	30 39 2	--	--	
1275	48	1 32 56.1	30 39 5	--	--	
1276	44,45	1 34 6.4	30 36 23	--	--	
1277	43	1 34 37.5	30 40 10	--	--	
1278	43	1 34 39.0	30 39 54	--	--	
1279	43	1 35 2.5	30 41 5	--	--	Partial border of large diffuse object
1280	40	1 33 42.3	30 47 47	--	--	
1281	39,40	1 33 58.5	30 44 42	--	--	
1282	38	1 34 26.6	30 48 51	--	--	
1283	35	1 33 56.5	30 54 7	--	--	

HBW emission regions are labeled on the M33 charts with the prefix H.

Notes to table:

^aFlux is in units of 10^{-15} erg cm⁻² s⁻¹ (from Wyder et al., 1998). Low surface brightness objects were not measured.

^bArea is in units of arcsec² (from Wyder et al., 1998).

^cRegions of diffuse emission are noted with a “d” in the comments; unresolved emission regions are noted with a “u”.

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Table 4d. M33 Supernova Remnants

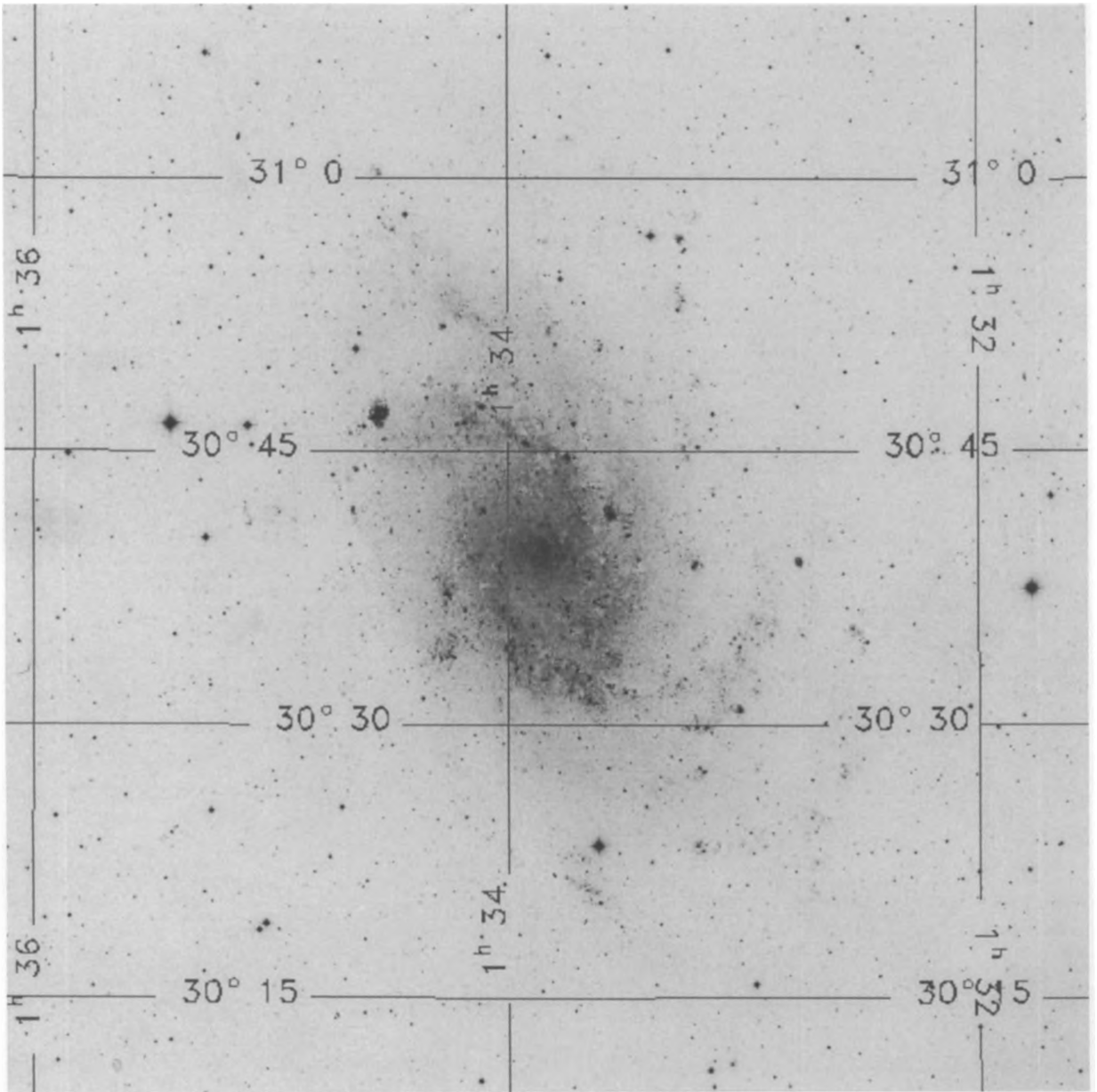
ID	Chart	RA (2000)	DEC (2000)
G1	53	1 32 30.8	30 27 39
G11	42	1 33 0.0	30 44 5
G14	52	1 33 3.5	30 31 16
G17	47	1 33 10.0	30 39 10
G18	42	1 33 9.9	30 42 18
G22	52	1 33 17.3	30 31 25
G37	46	1 33 37.4	30 40 4
G38	40,41,46	1 33 37.5	30 42 13
G39	46	1 33 40.8	30 39 40
G41	40,41,46	1 33 40.3	30 42 28
G42	51	1 33 41.2	30 32 28
G44	45,46	1 33 42.5	30 41 48
G45	45,46	1 33 42.9	30 41 1
G56	45	1 33 57.0	30 40 44
G57	50,51	1 33 57.0	30 34 59
G58	45	1 33 57.9	30 37 52
G60	50,51	1 33 58.3	30 36 22
G63	39,40	1 34 0.2	30 47 19
G66	50	1 34 1.3	30 35 21
G69	50	1 34 4.2	30 32 54
G71	39	1 34 10.1	30 47 11
G72	44,45	1 34 11.0	30 39 1
G73	44,45	1 34 10.6	30 42 21
G76	44	1 34 13.6	30 43 25
G79	44	1 34 14.2	30 41 52
G81	44	1 34 14.3	30 39 39
G82	50	1 34 15.5	30 33 0
G90	38,39	1 34 25.3	30 48 27
G91	44	1 34 29.4	30 41 32
G95	49	1 34 36.0	30 36 20
S14	45,46	1 33 46.9	30 37 18

SNRs with prefix G from Gordon et al. (1998) and prefix S from Sabbadin (1979). Gordon et al. (1998) cross-reference their identifications with previously catalogued supernova remnants.

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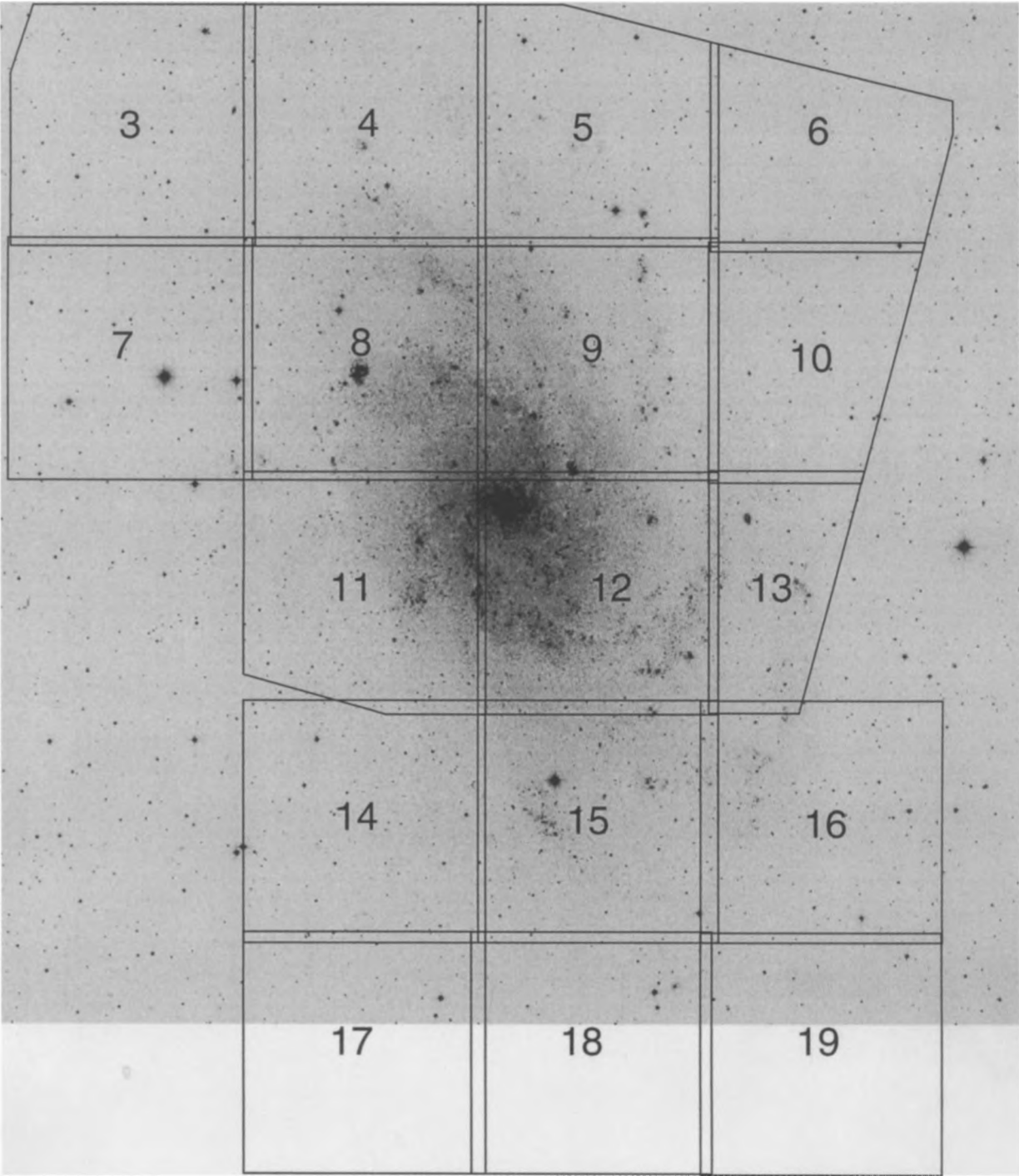
M33

Chart 1

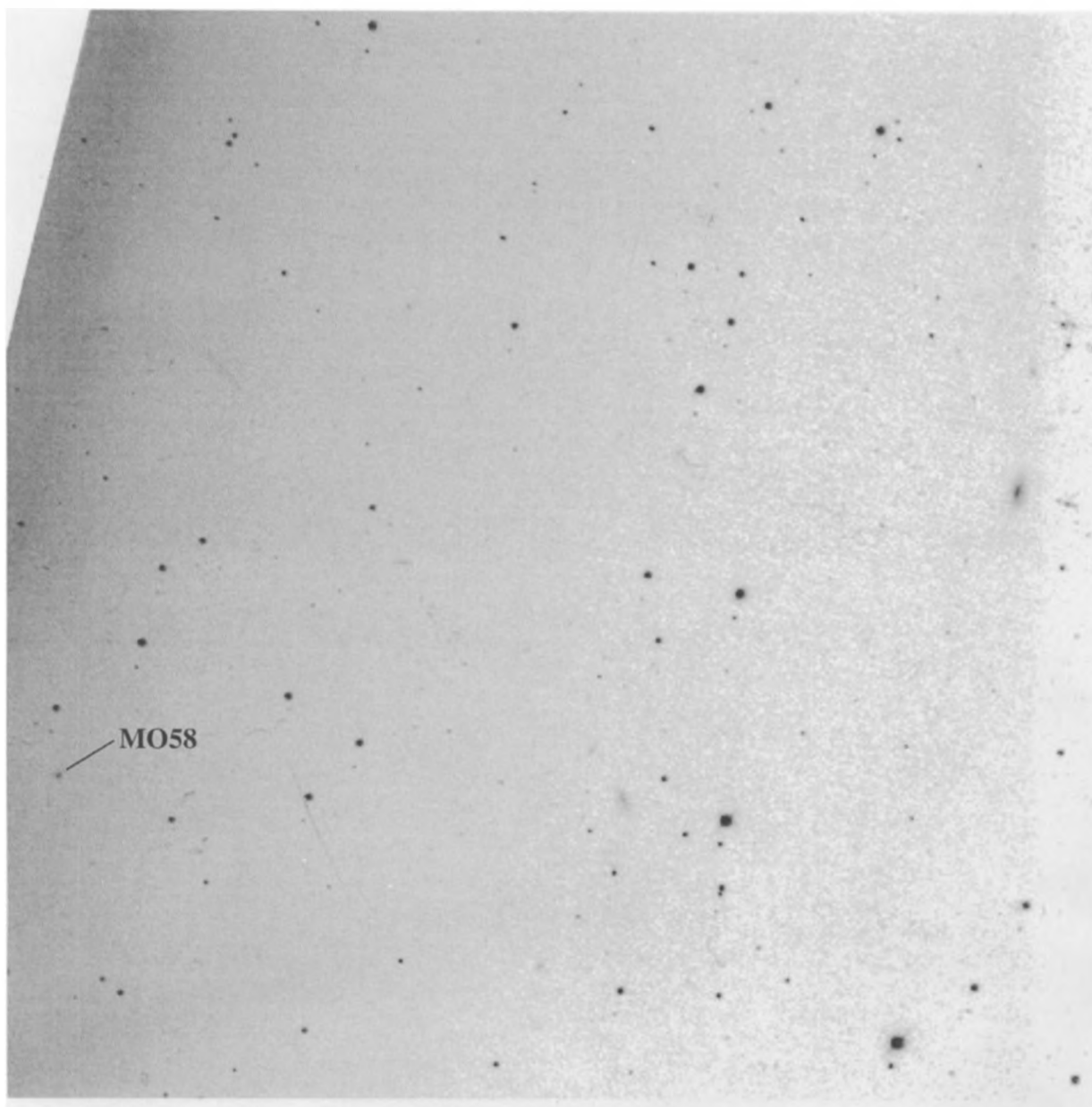


M33

Chart 2

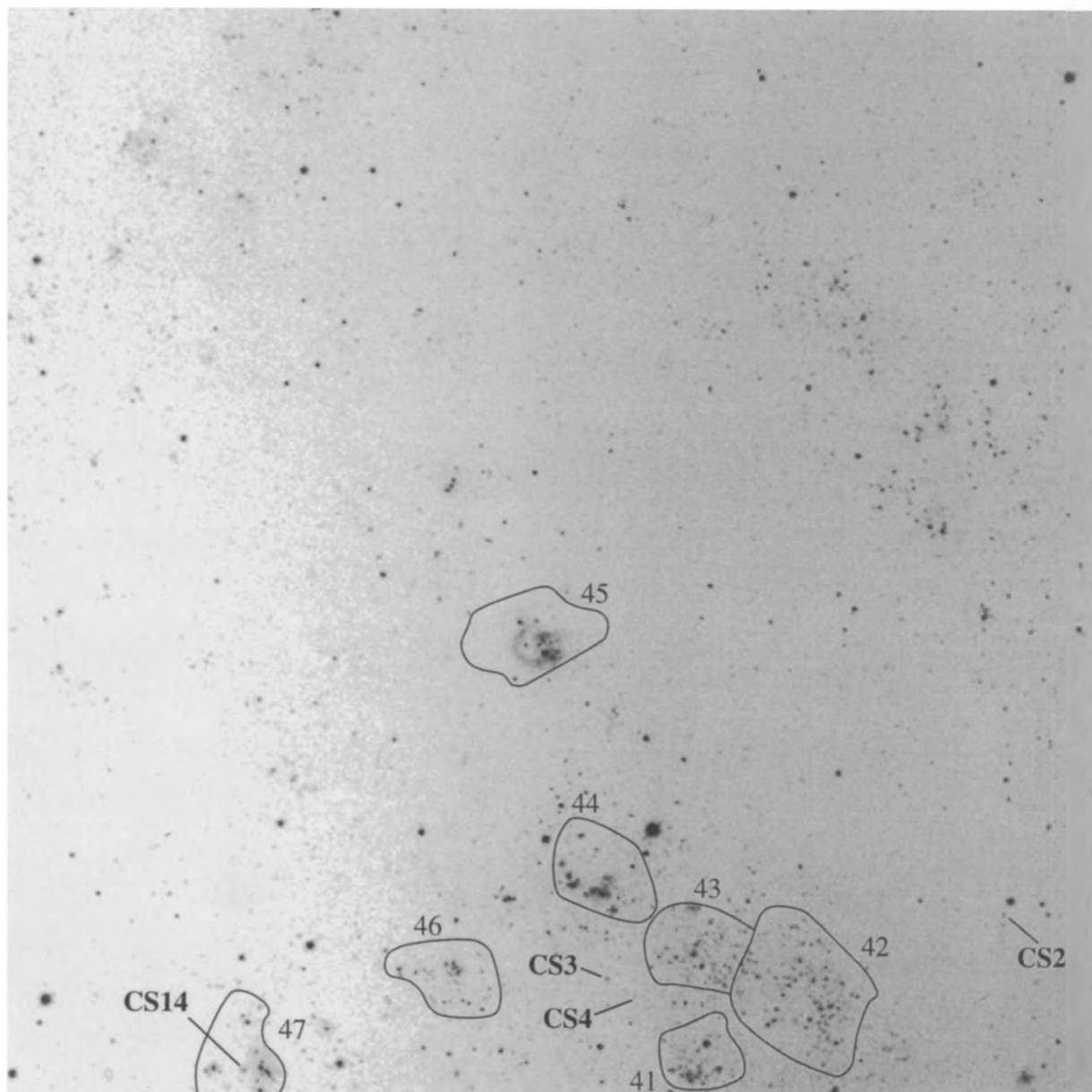


M33
Chart 3

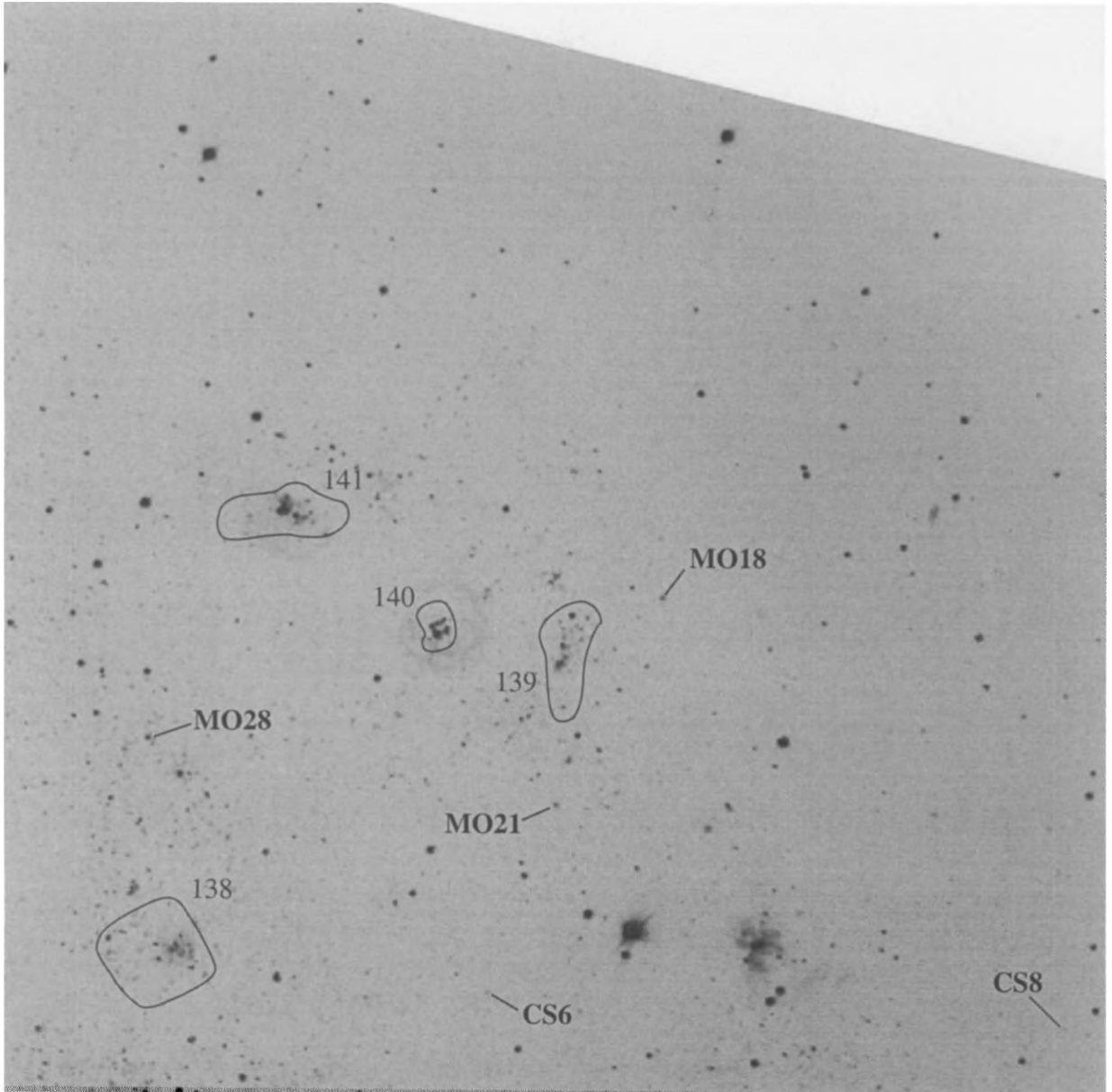


M33

Chart 4

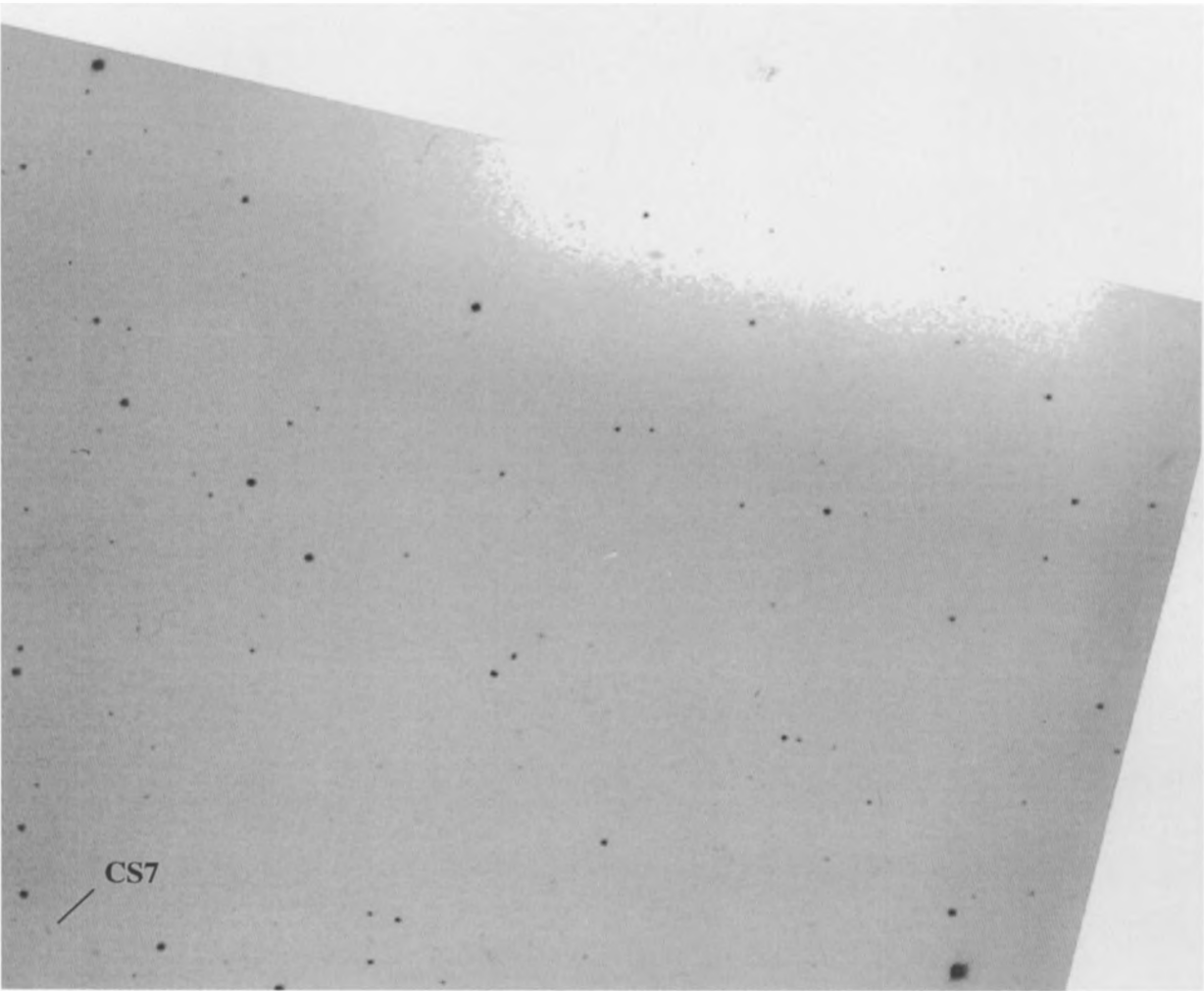


M33
Chart 5

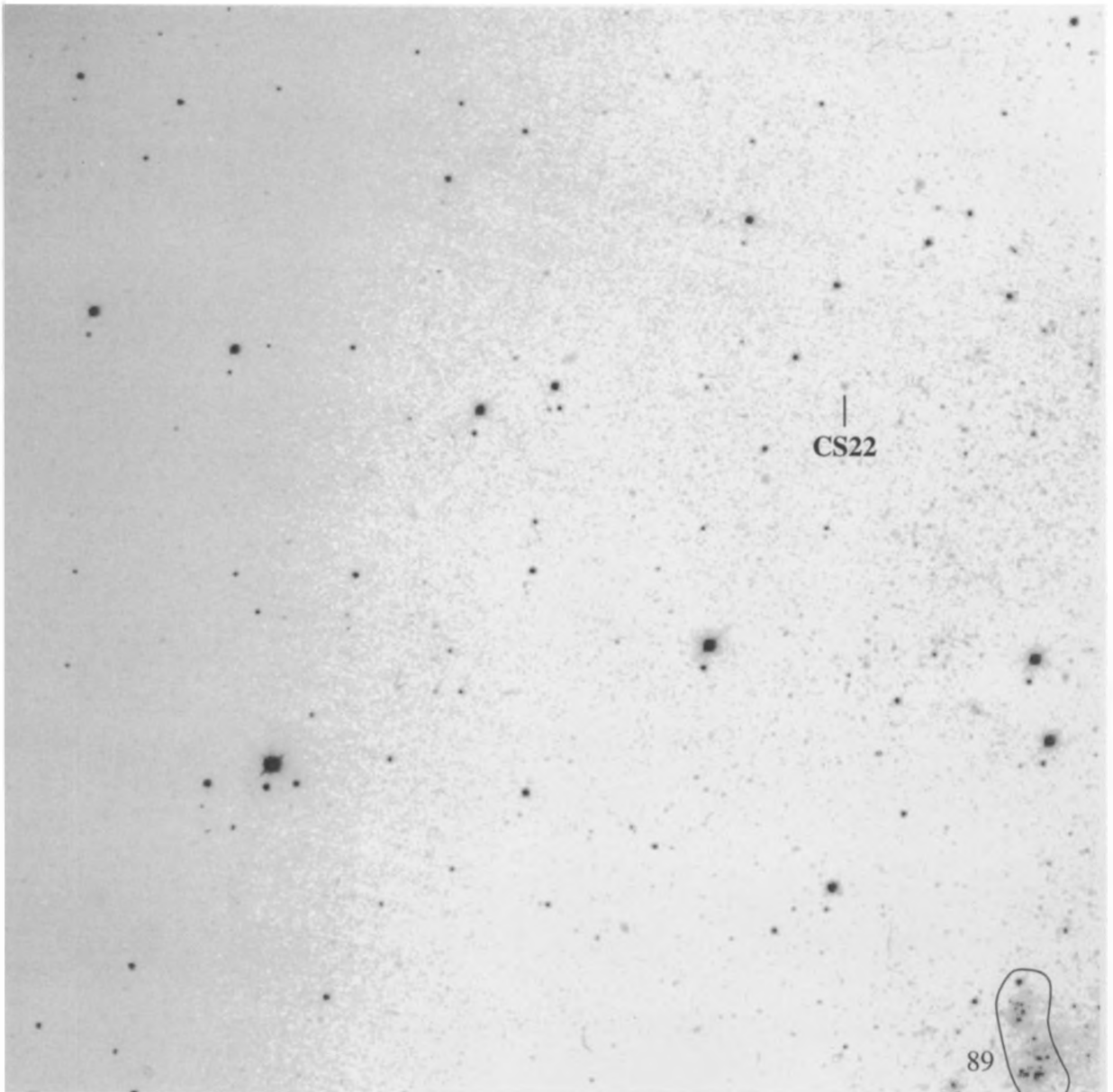


M33

Chart 6

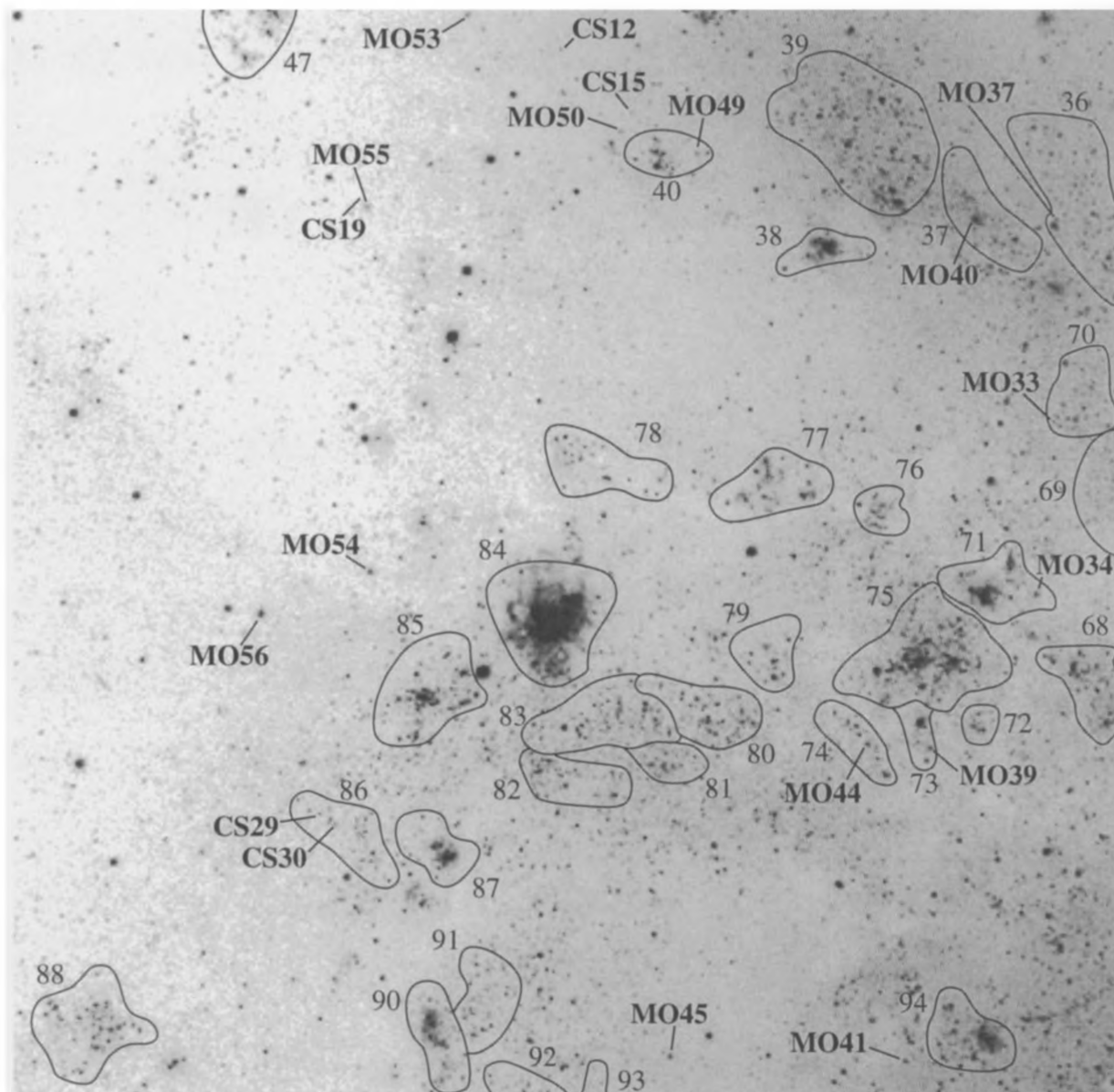


M33
Chart 7

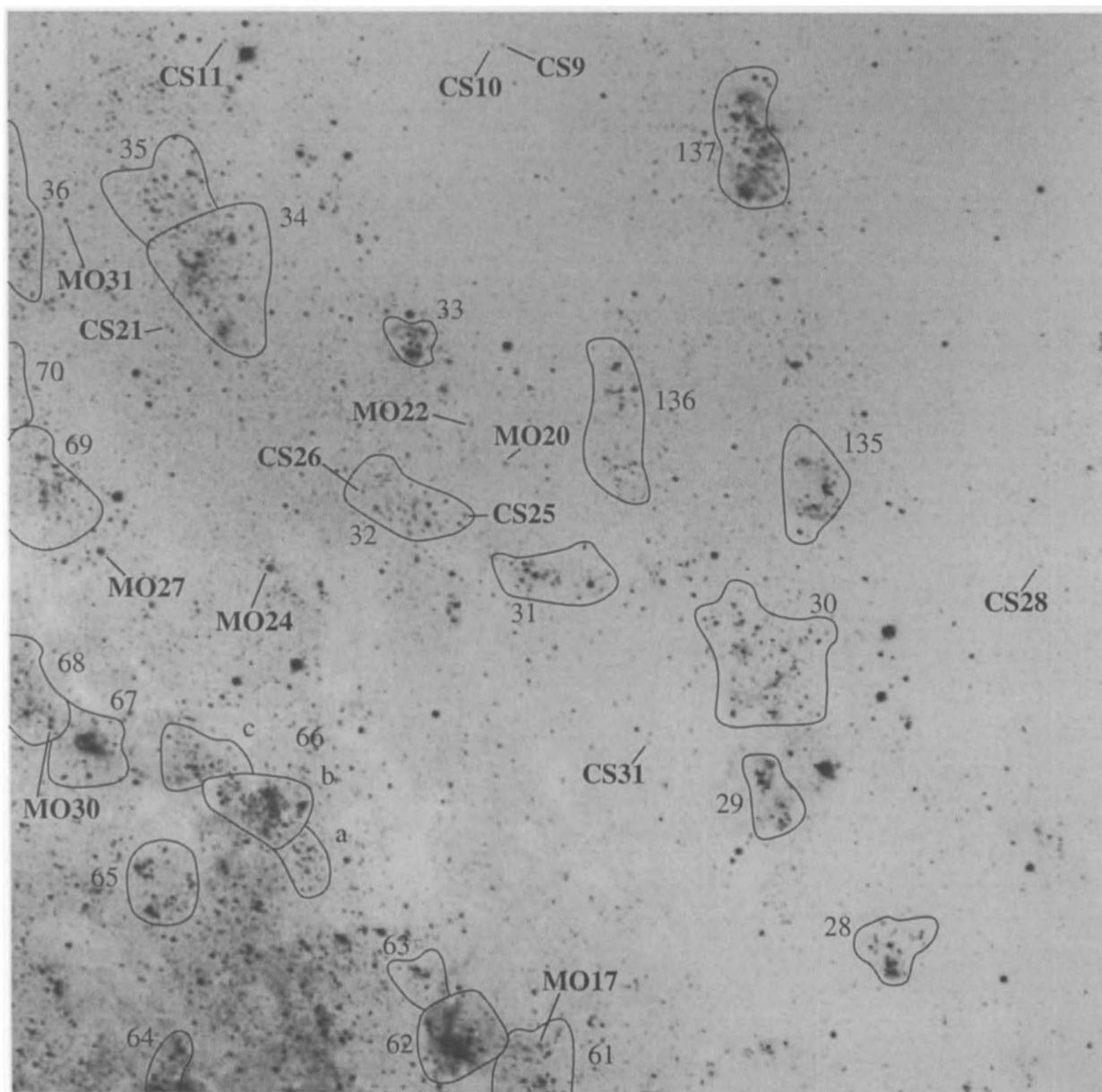


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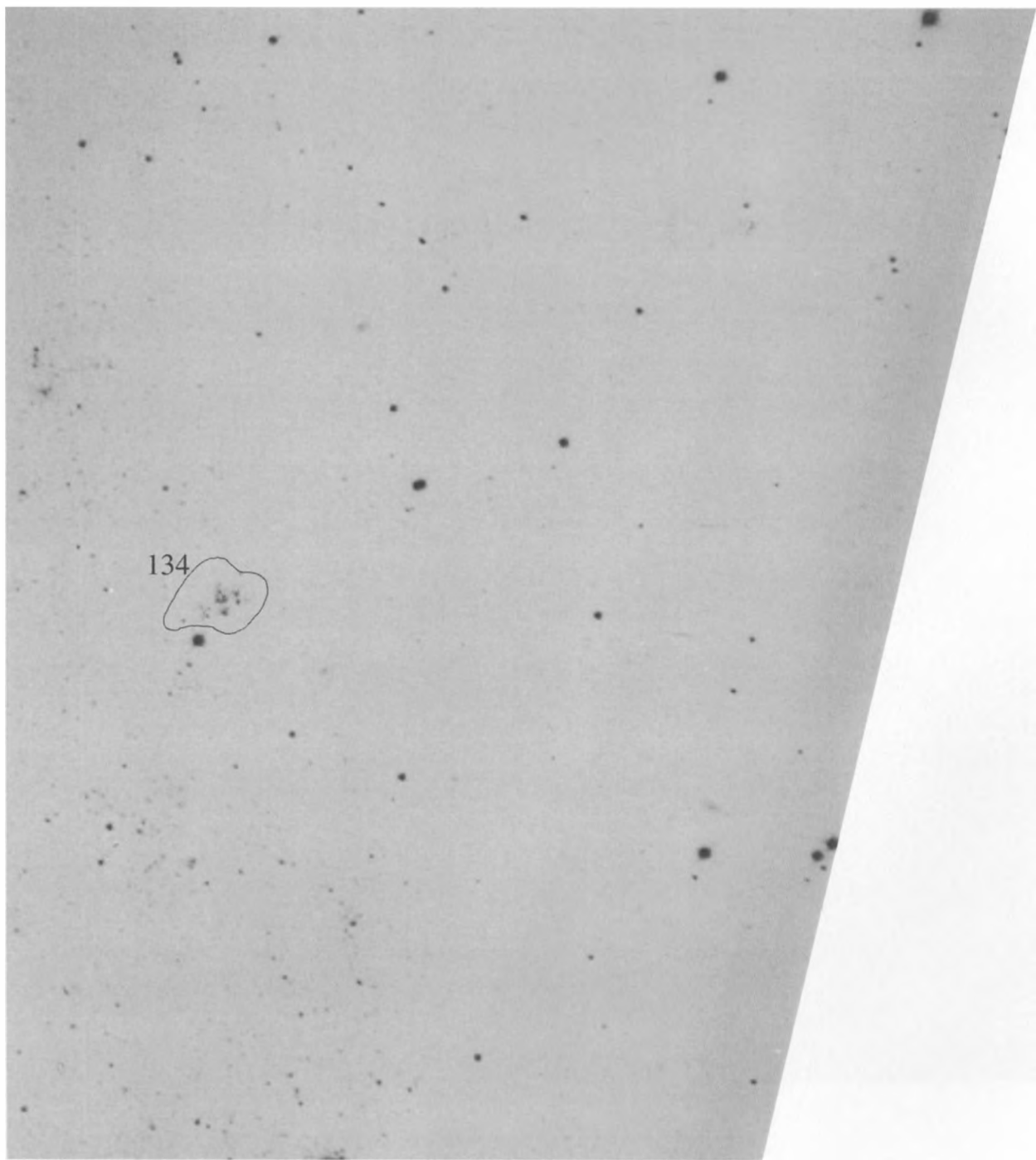
Chart 8



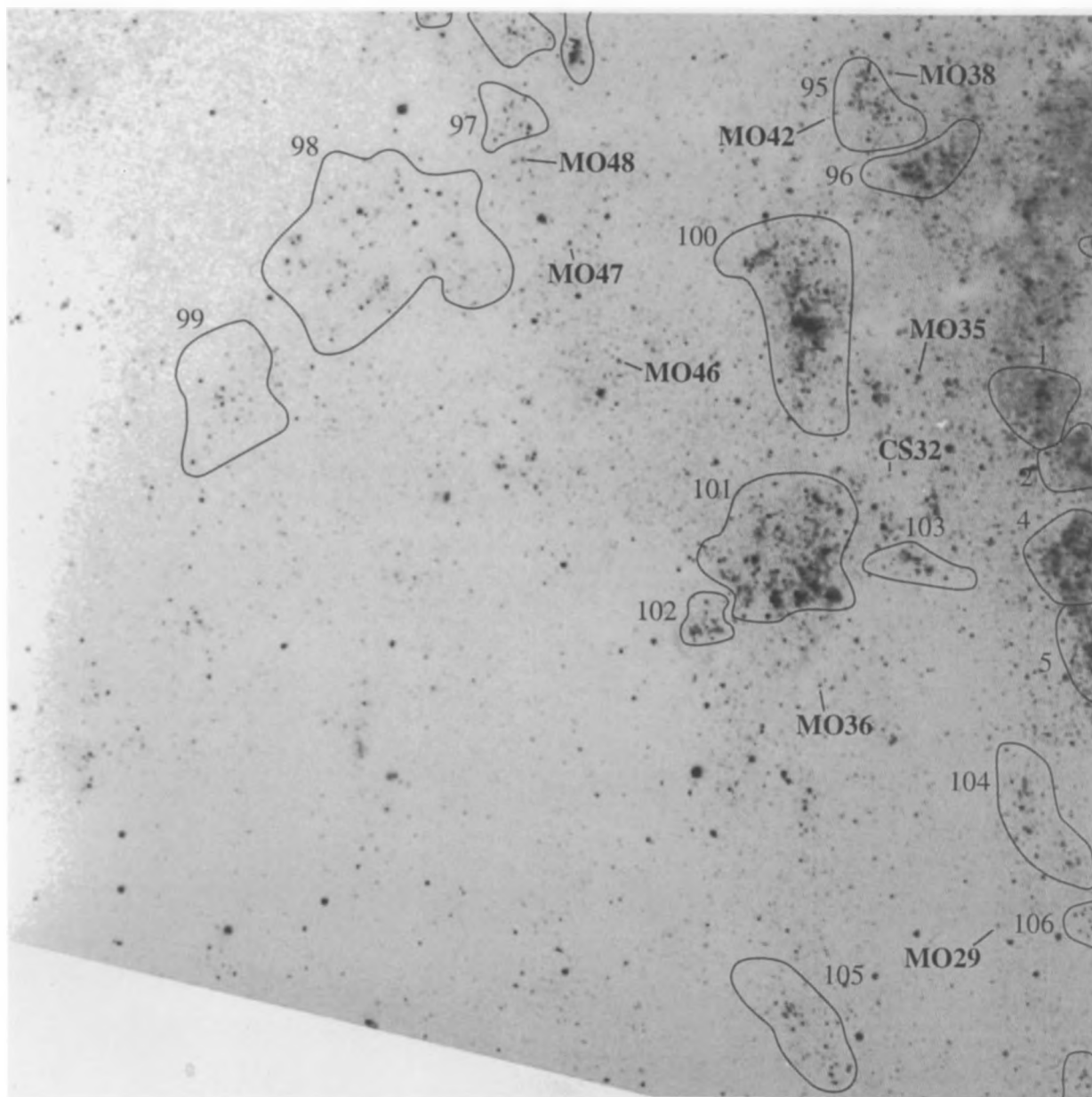
M33
Chart 9



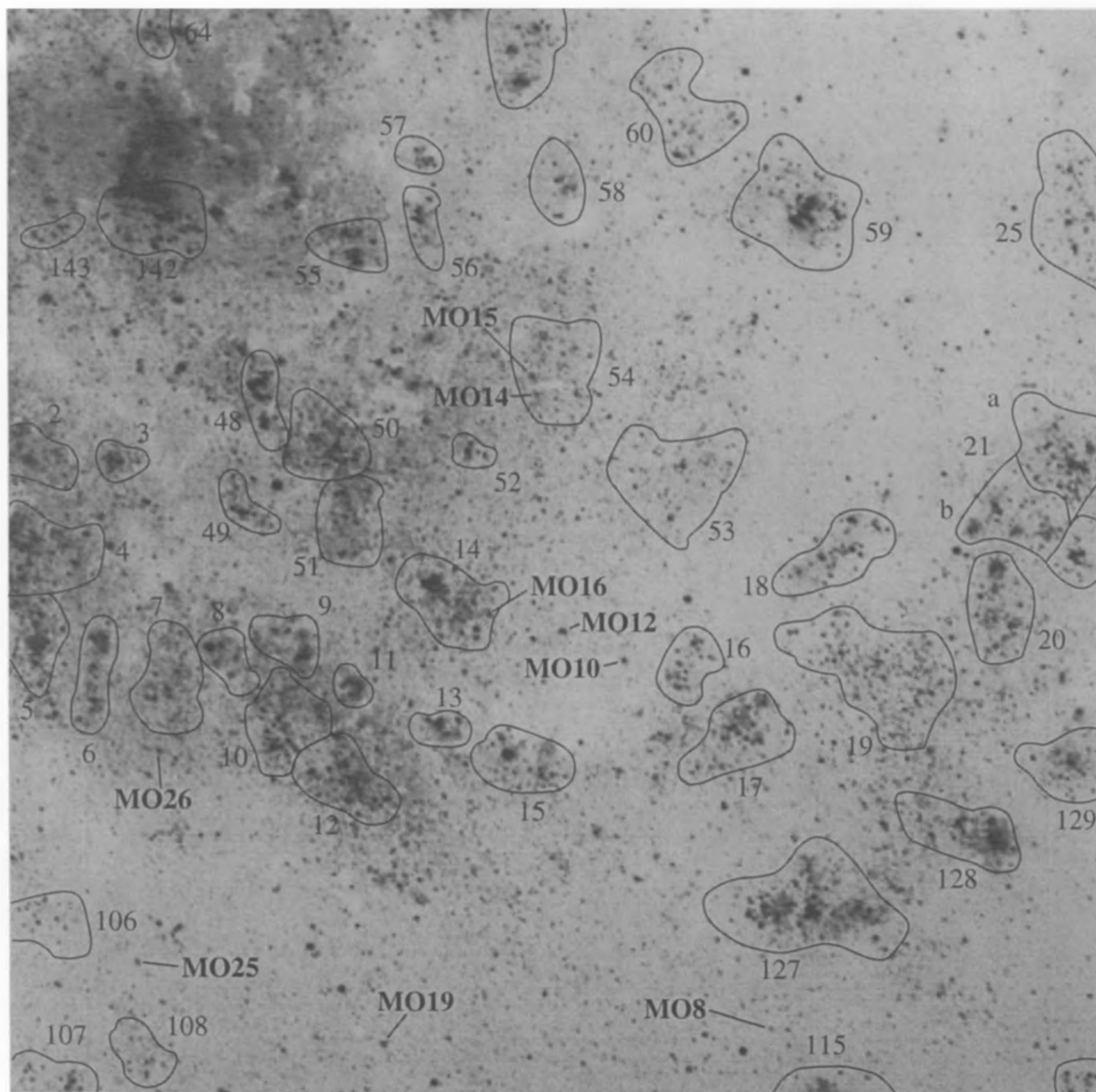
M33
Chart 10



M33
Chart 11

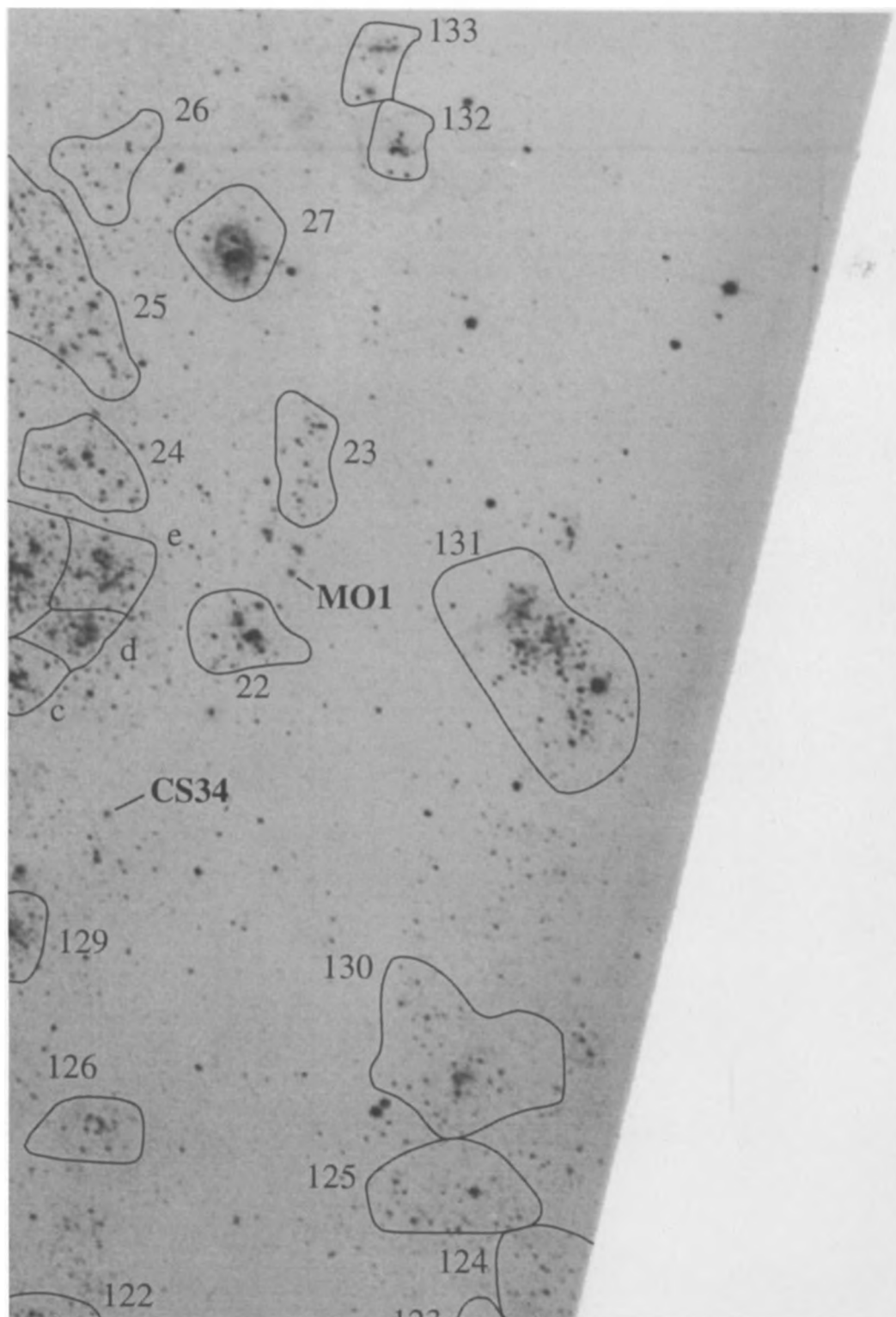


M33
Chart 12

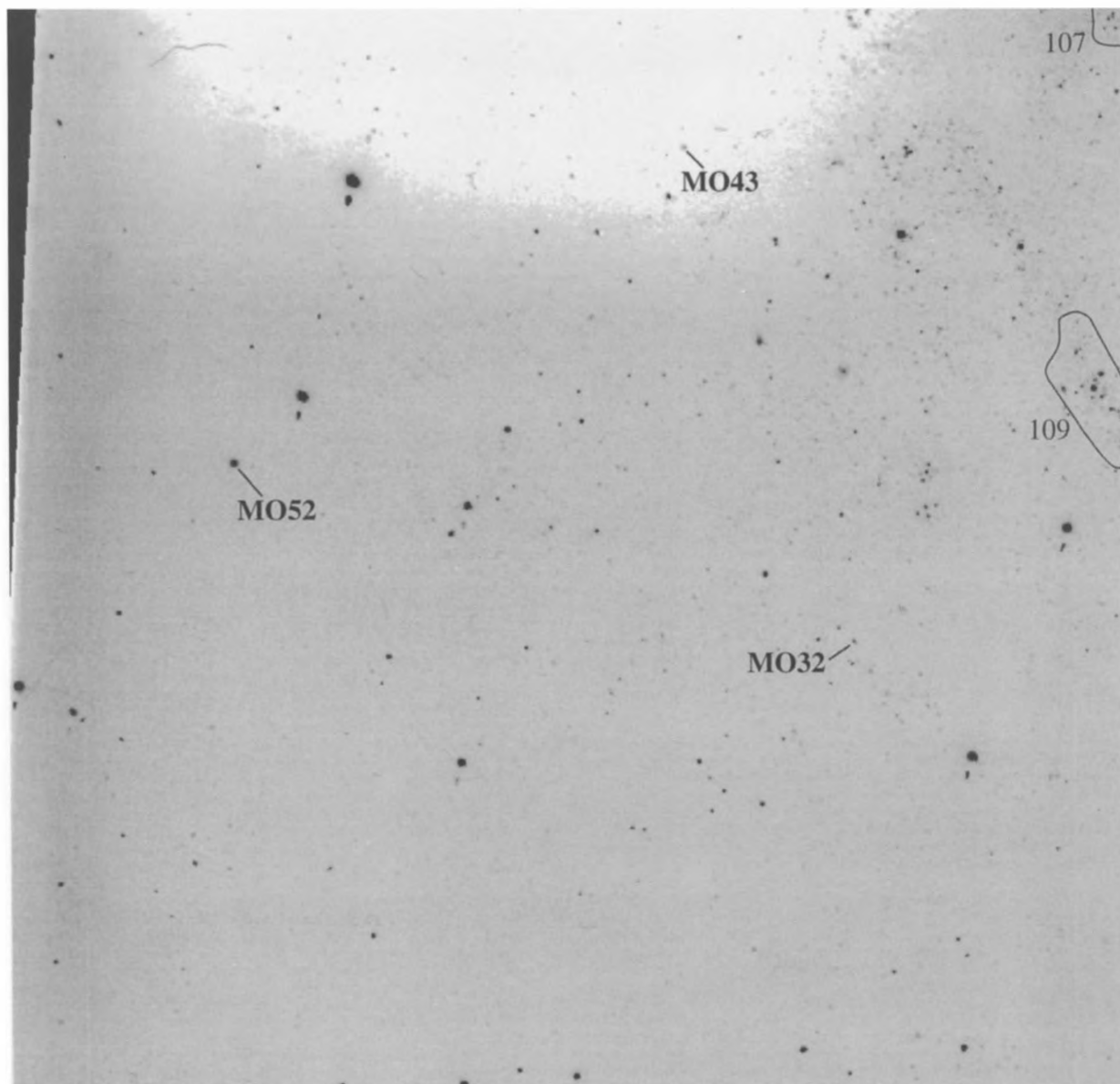


M33

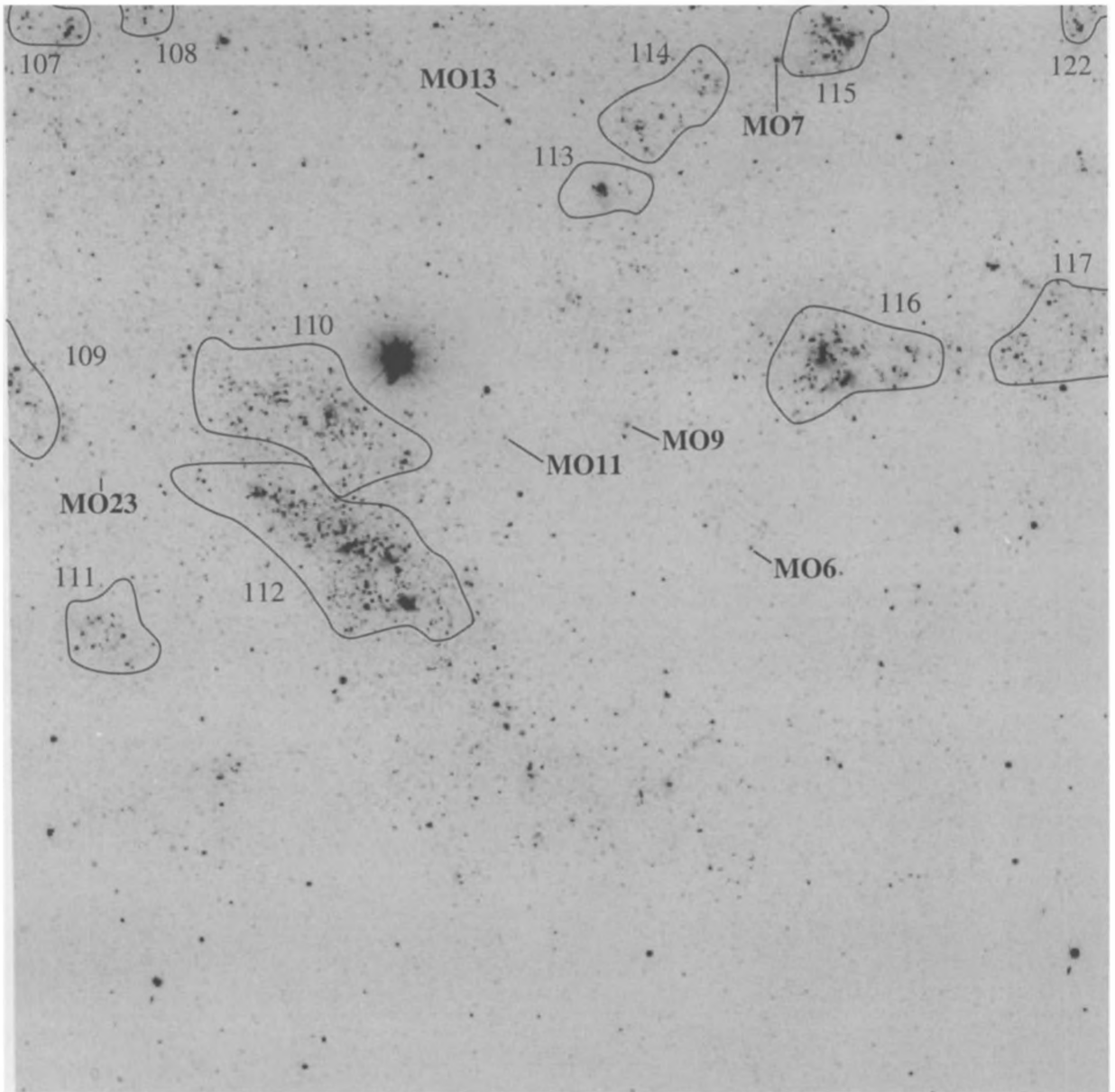
Chart 13



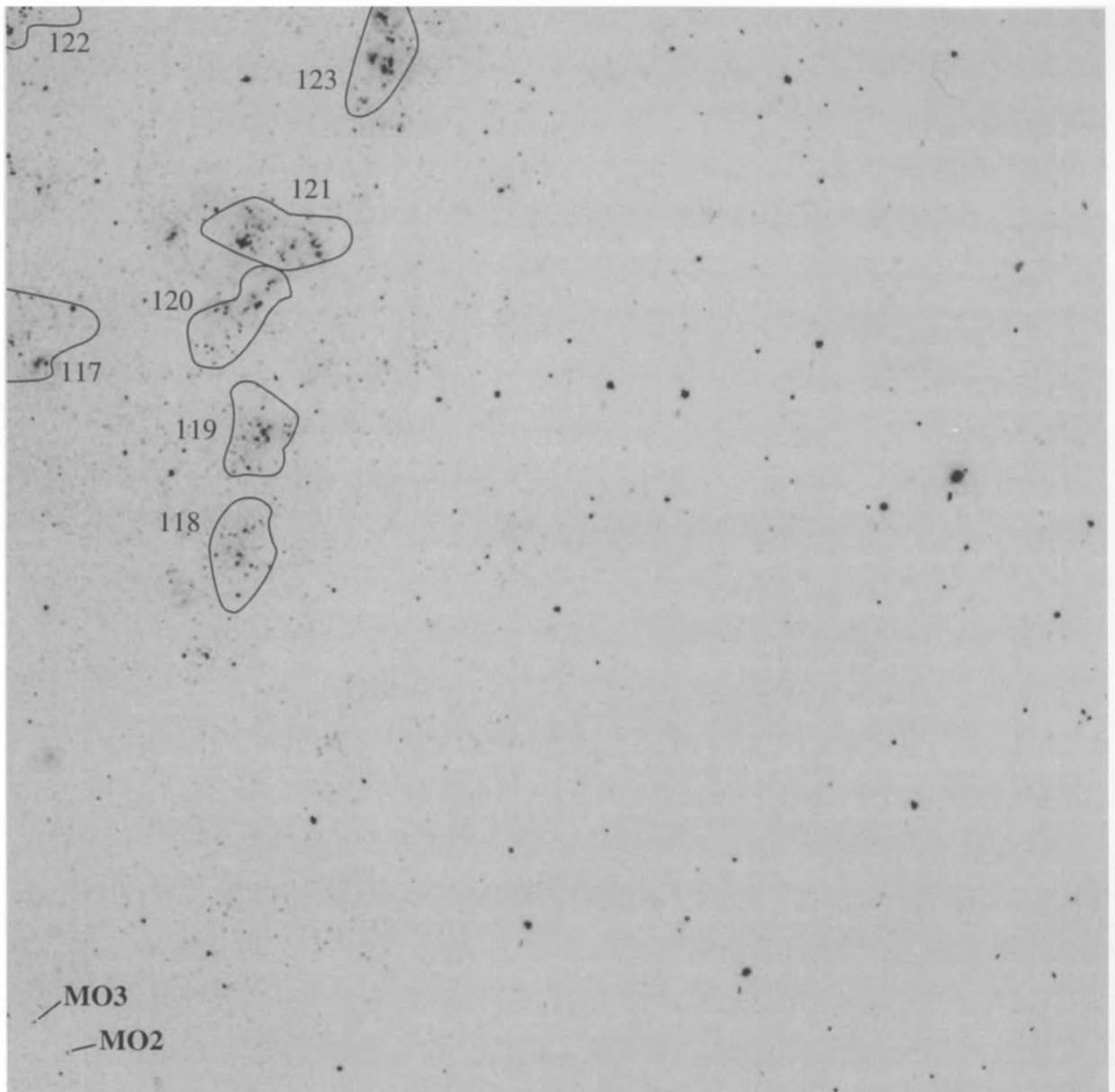
M33
Chart 14



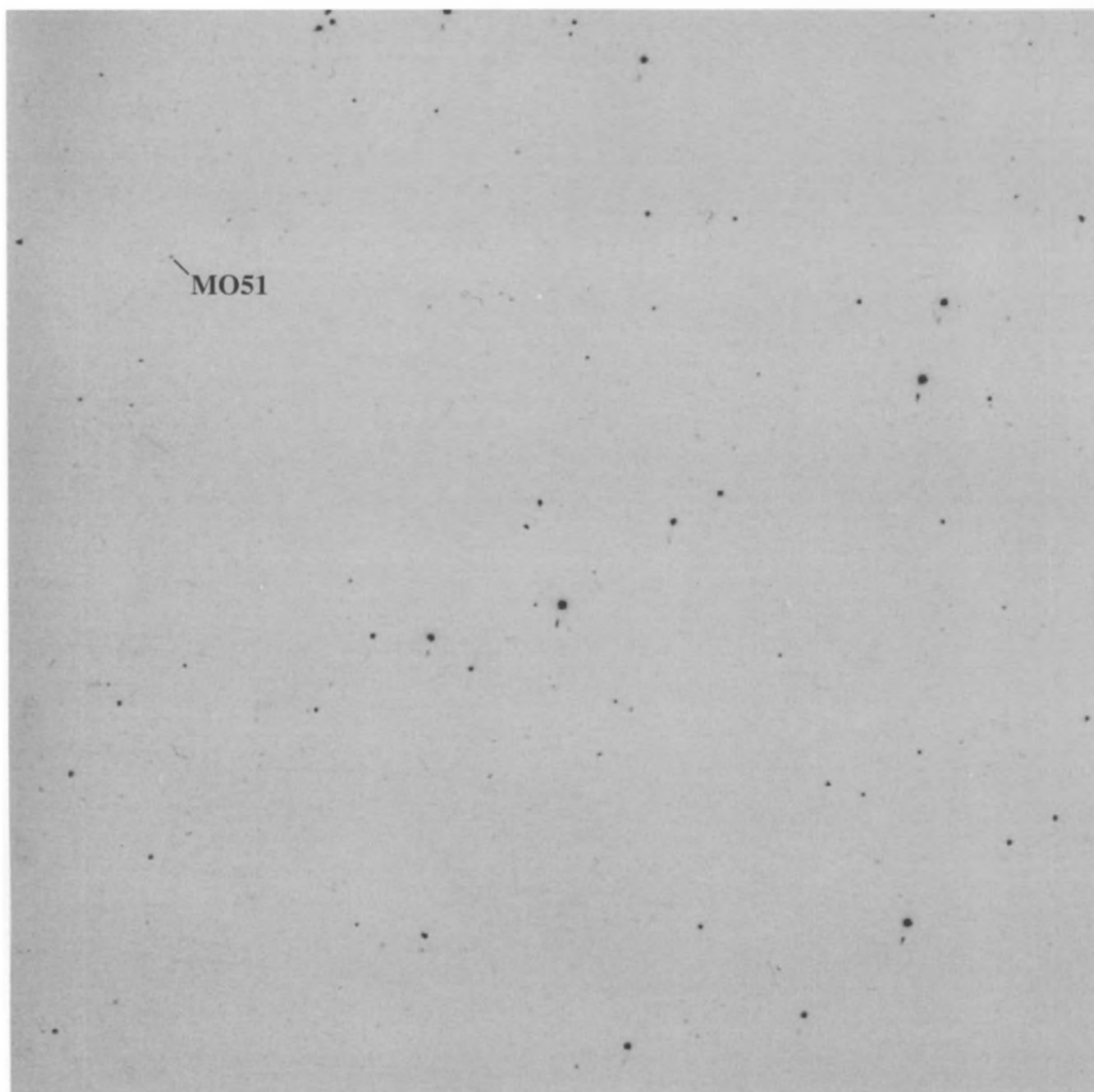
M33
Chart 15



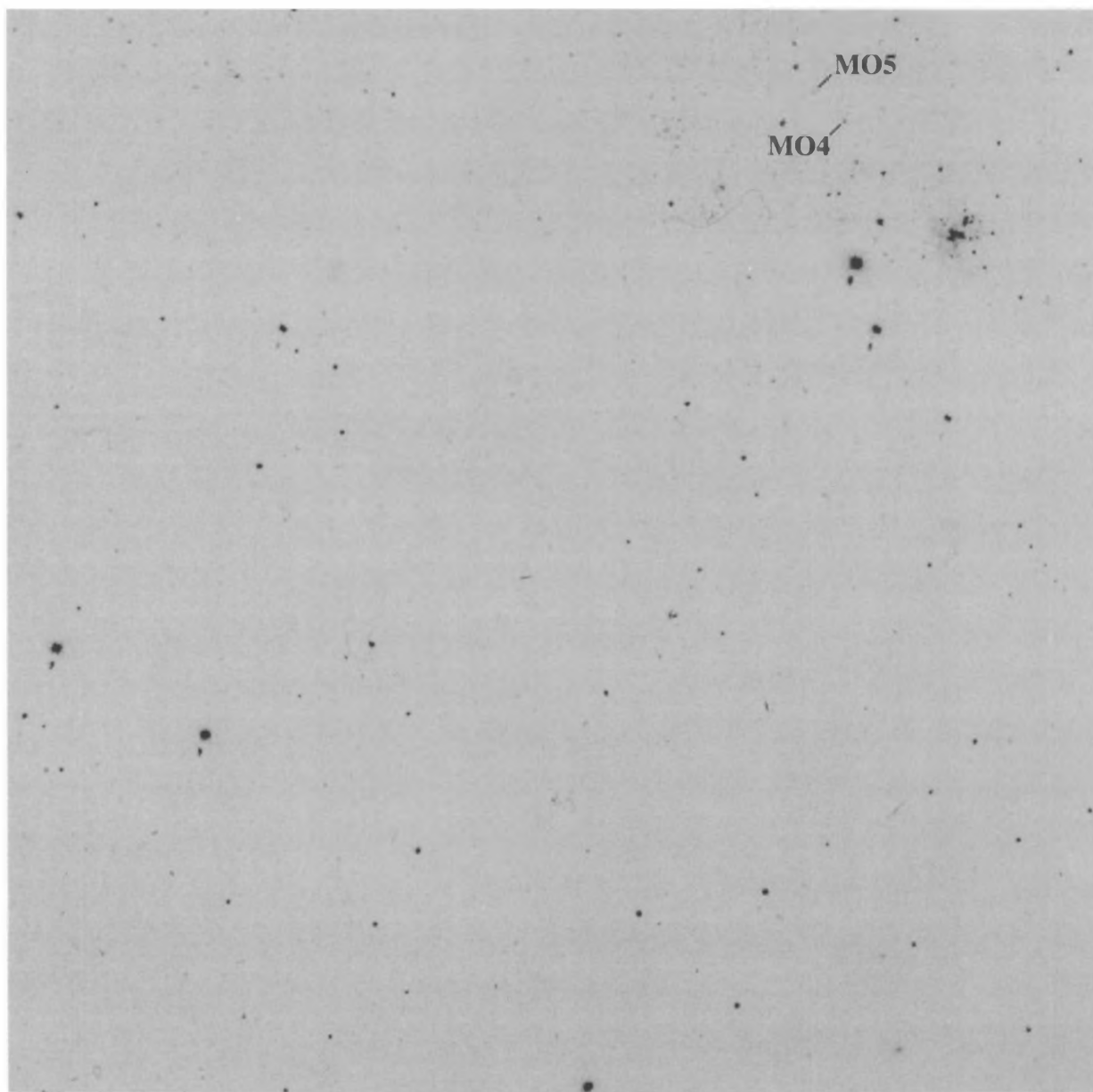
M33
Chart 16



M33
Chart 17



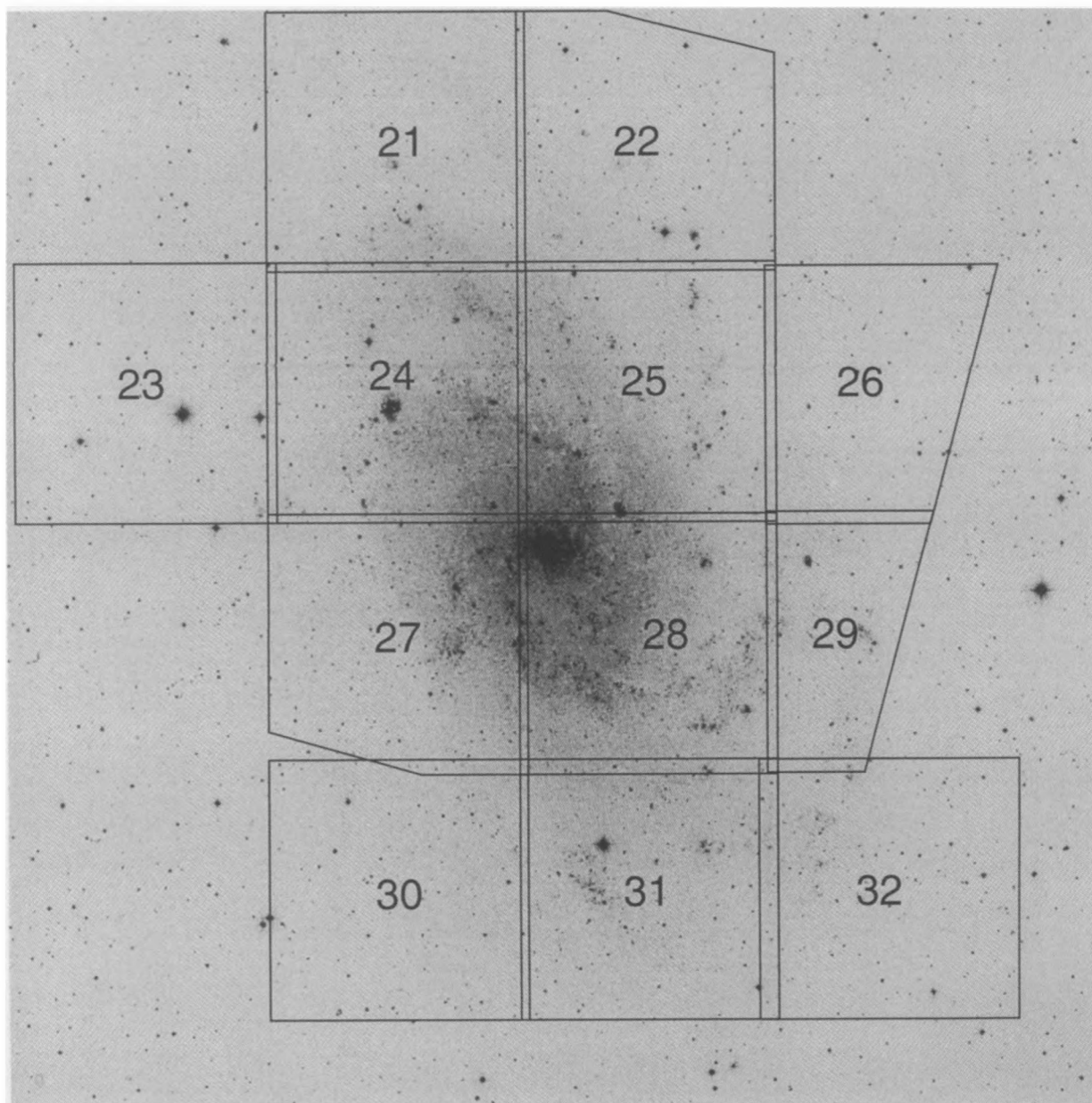
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Chart 18



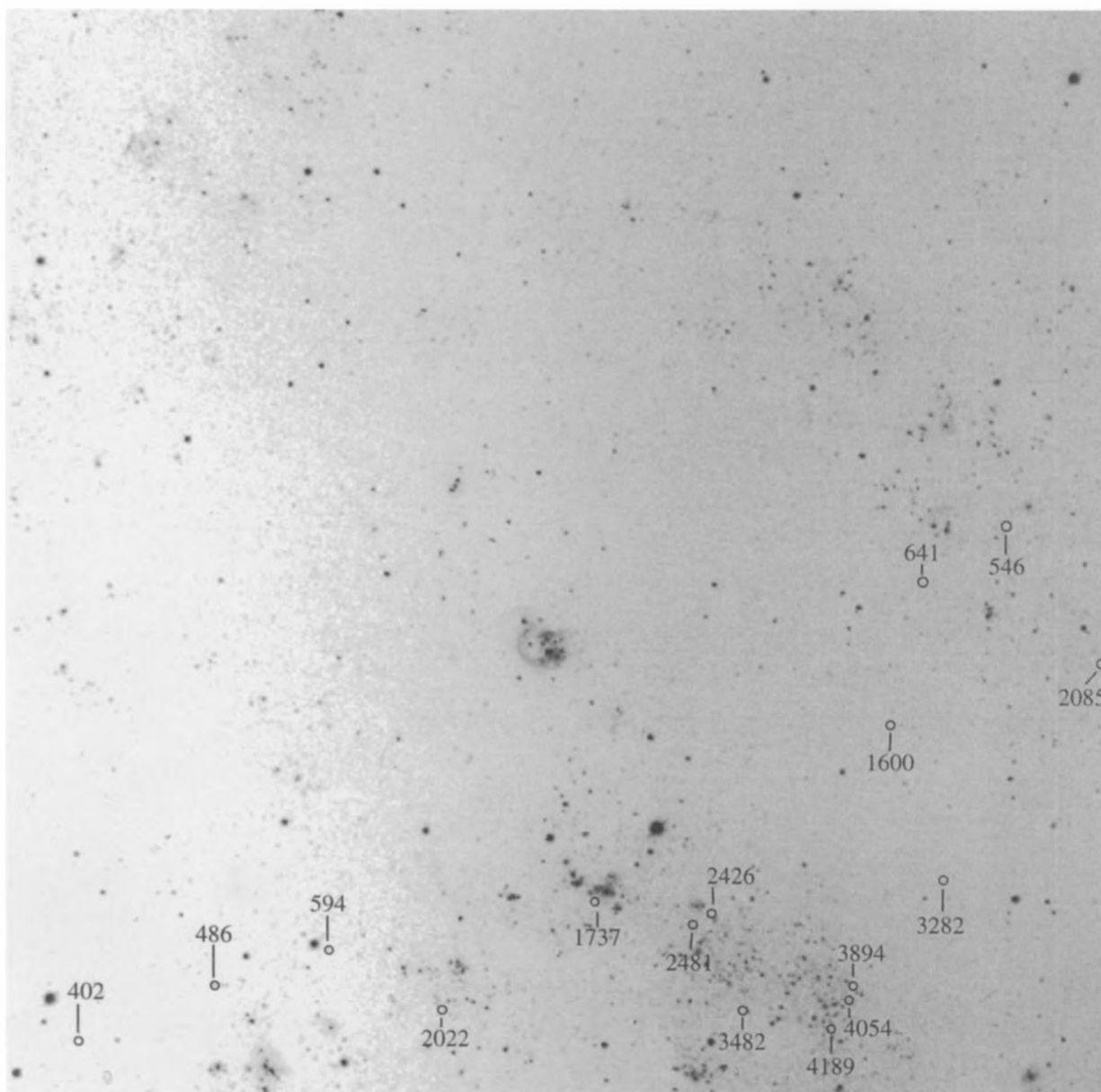
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Chart 19



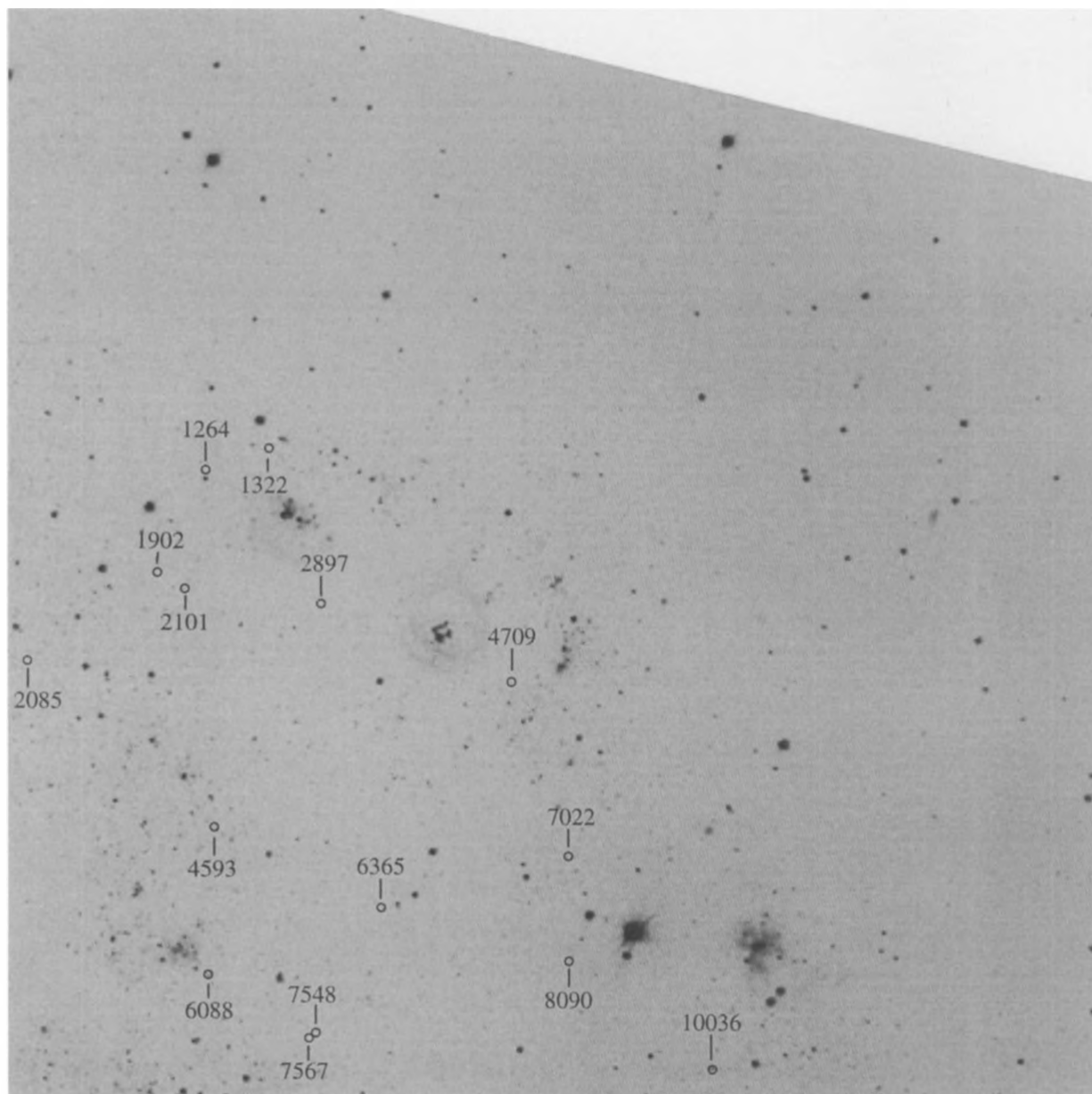
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Chart 20



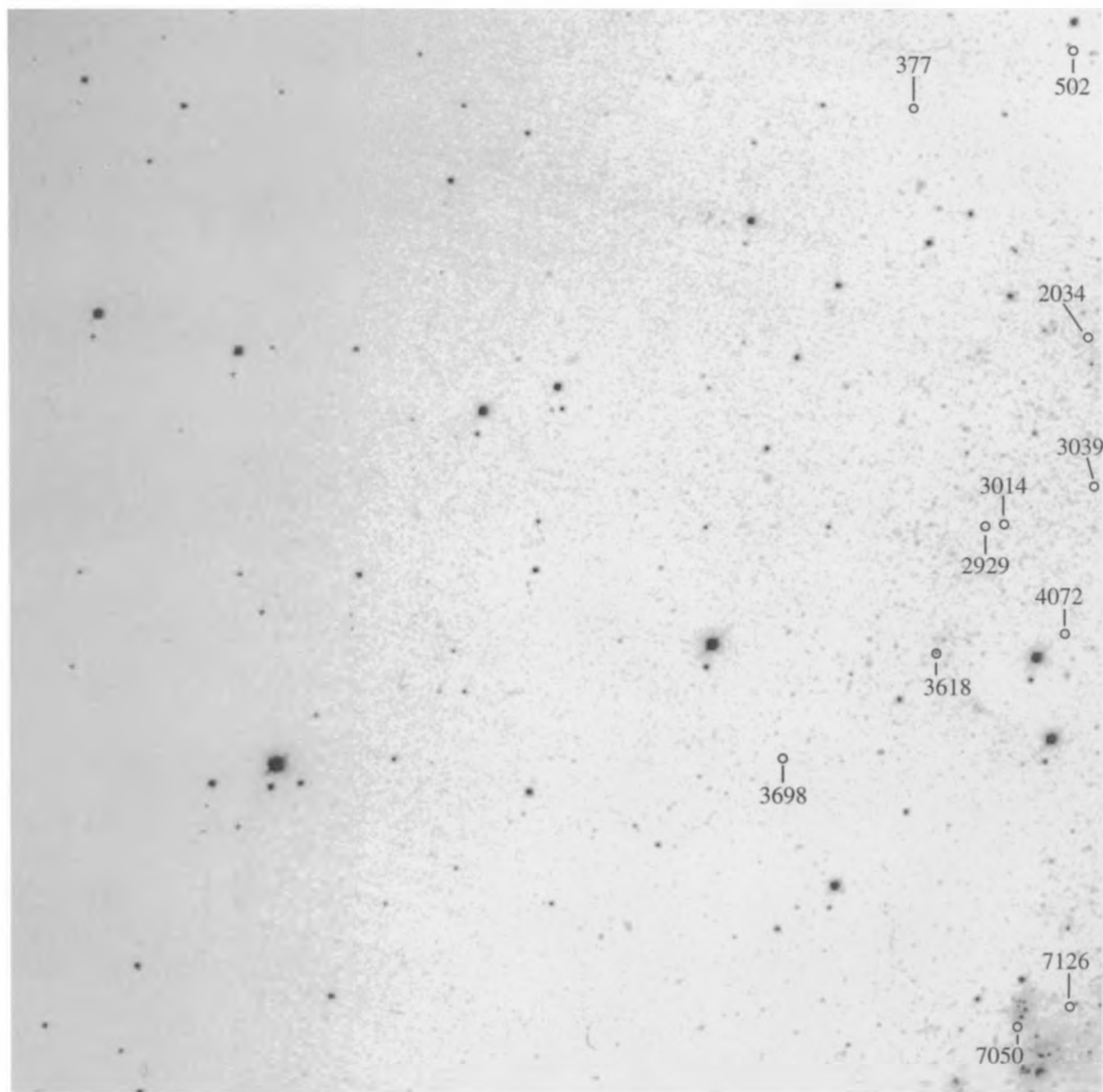
M33
Chart 21



M33
Chart 22

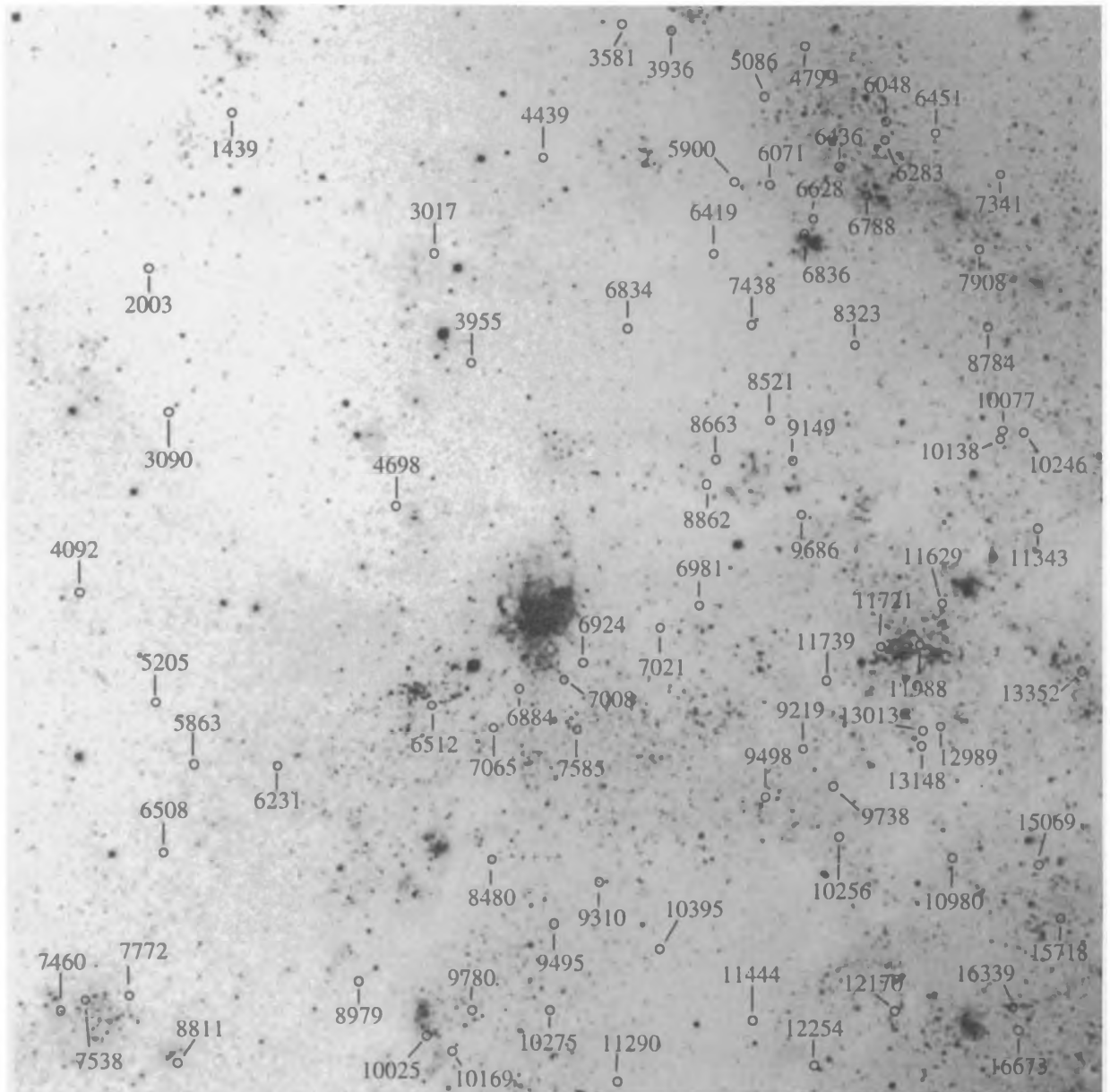


M33
Chart 23

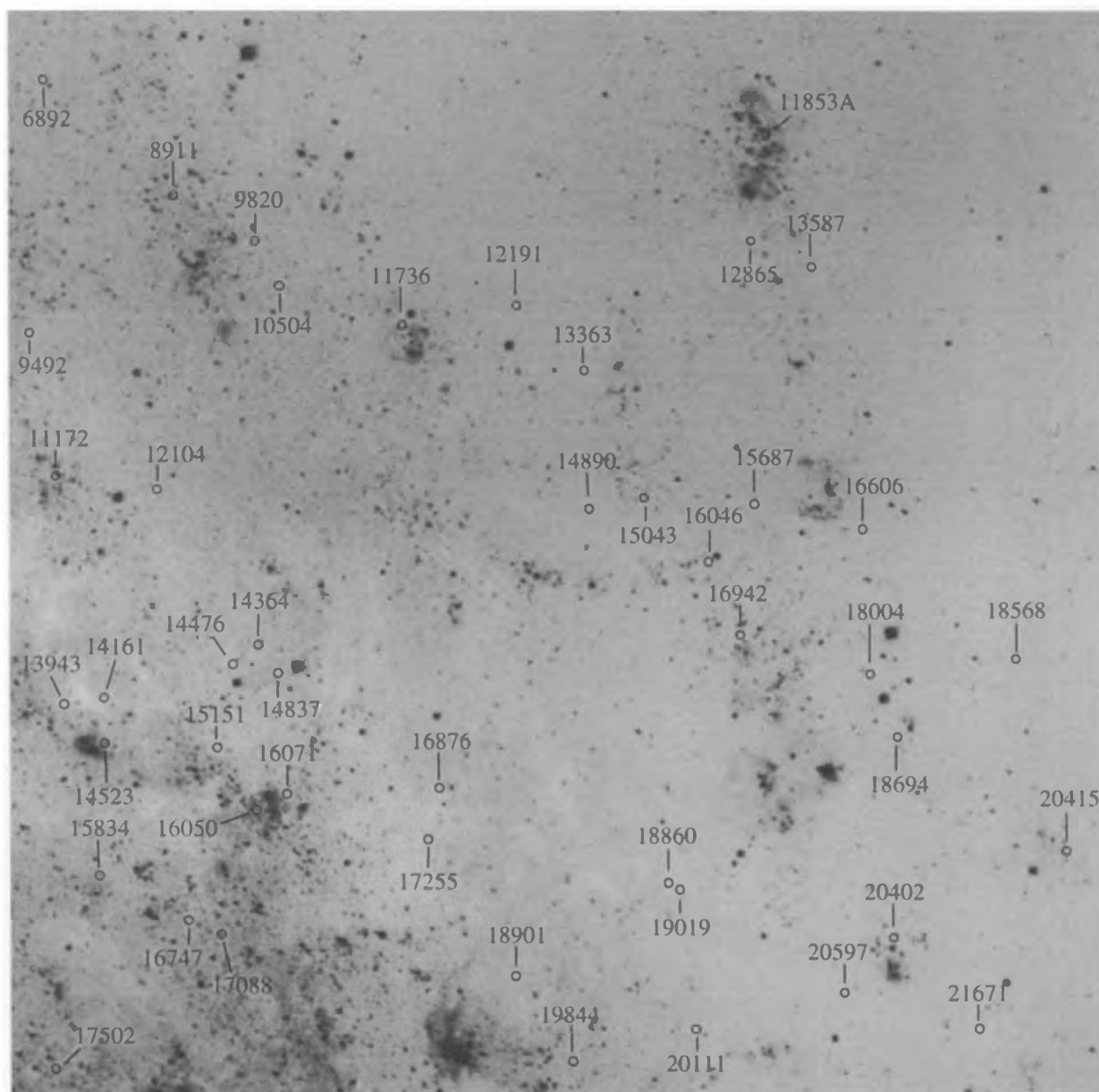


M33

Chart 24



M33
Chart 25



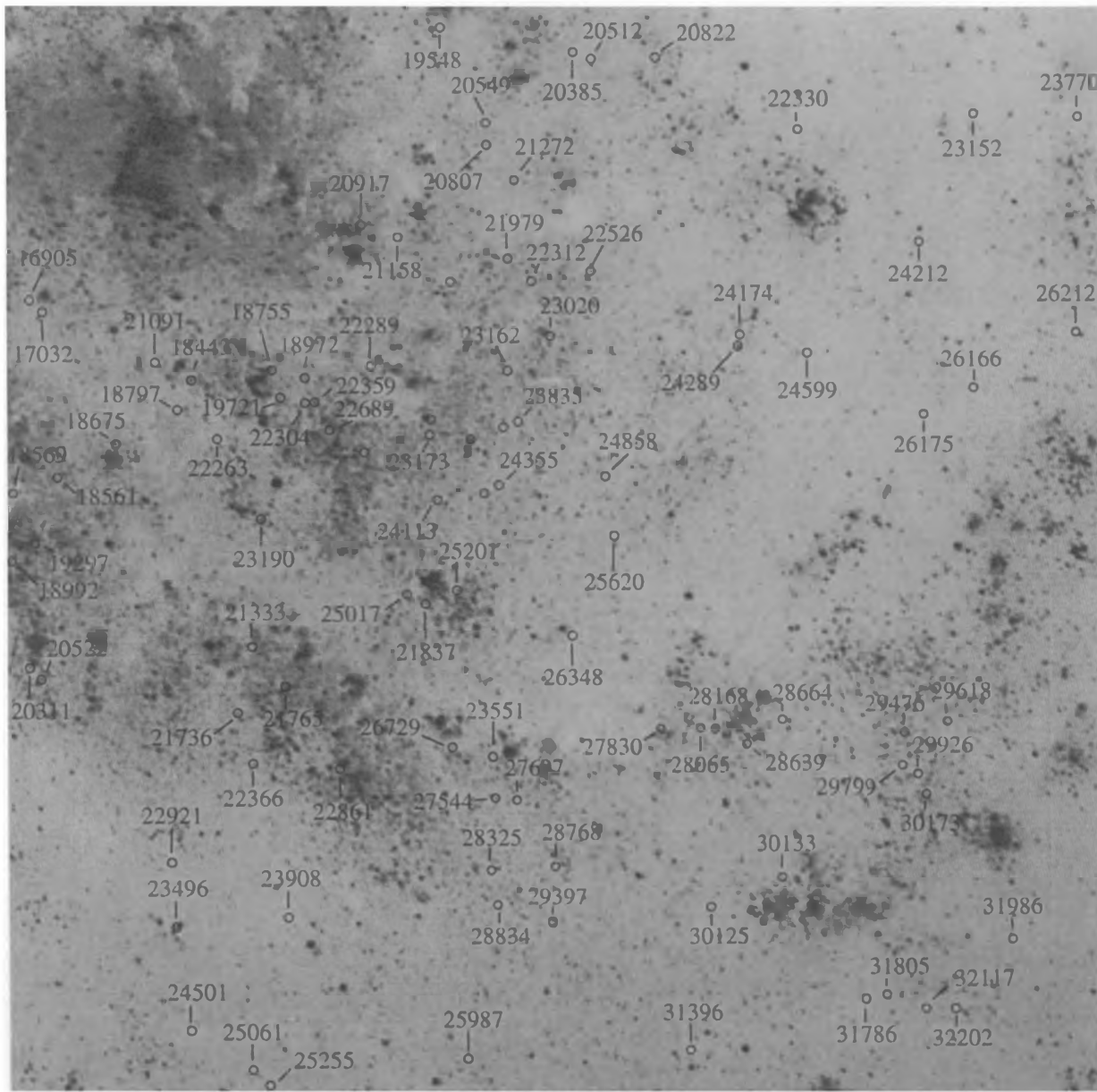
M33
Chart 26



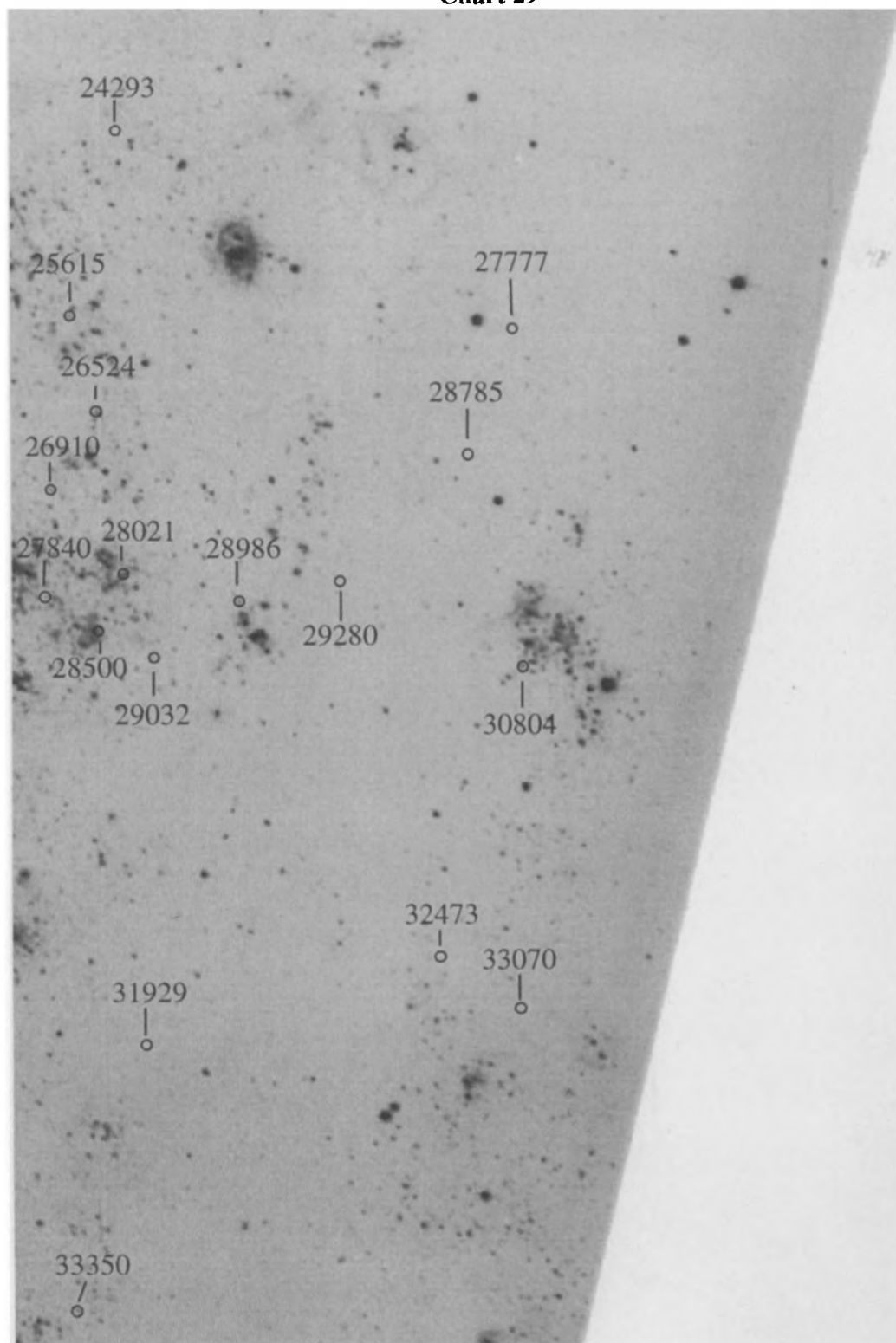
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Chart 27



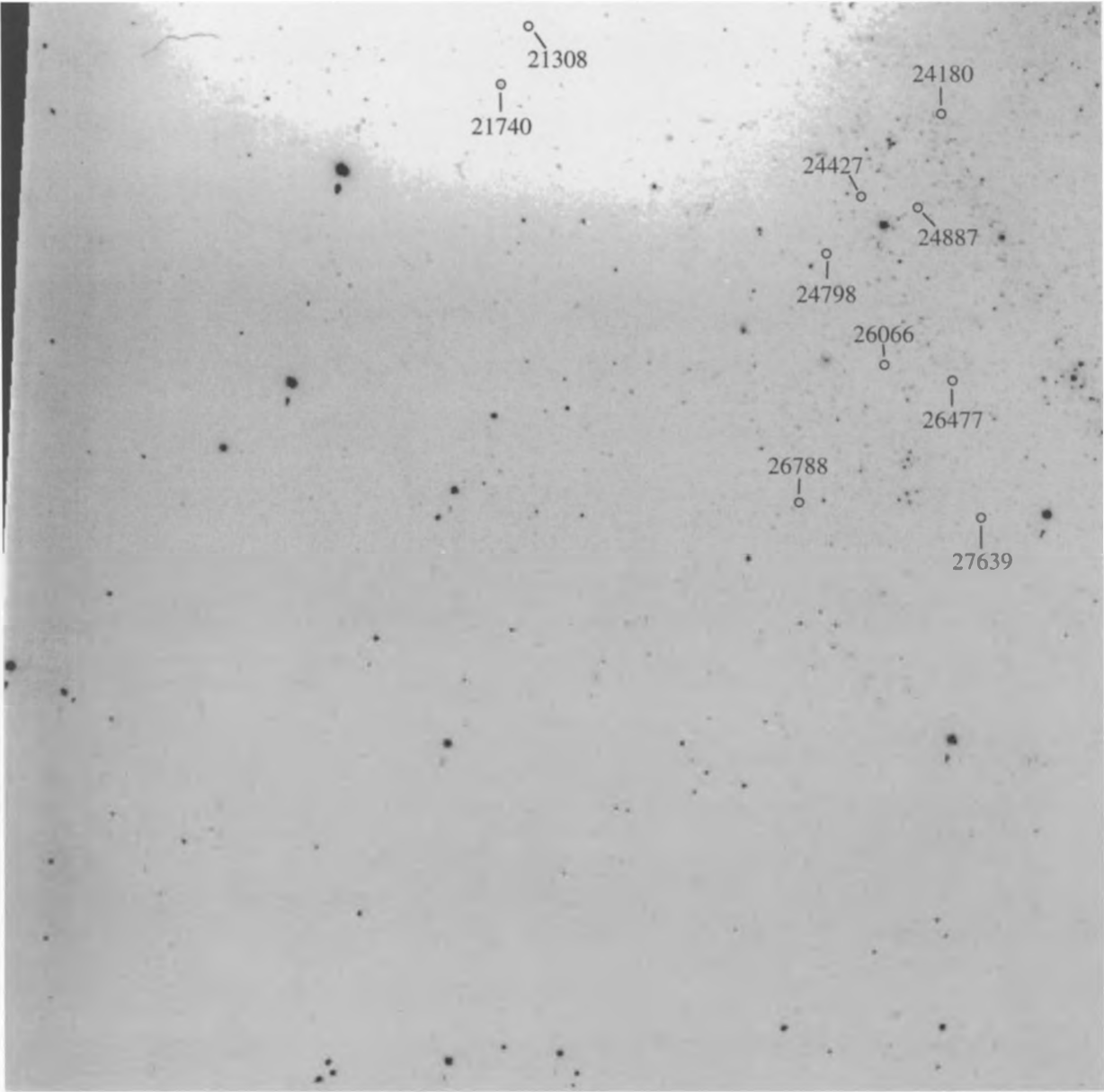
Chart 28



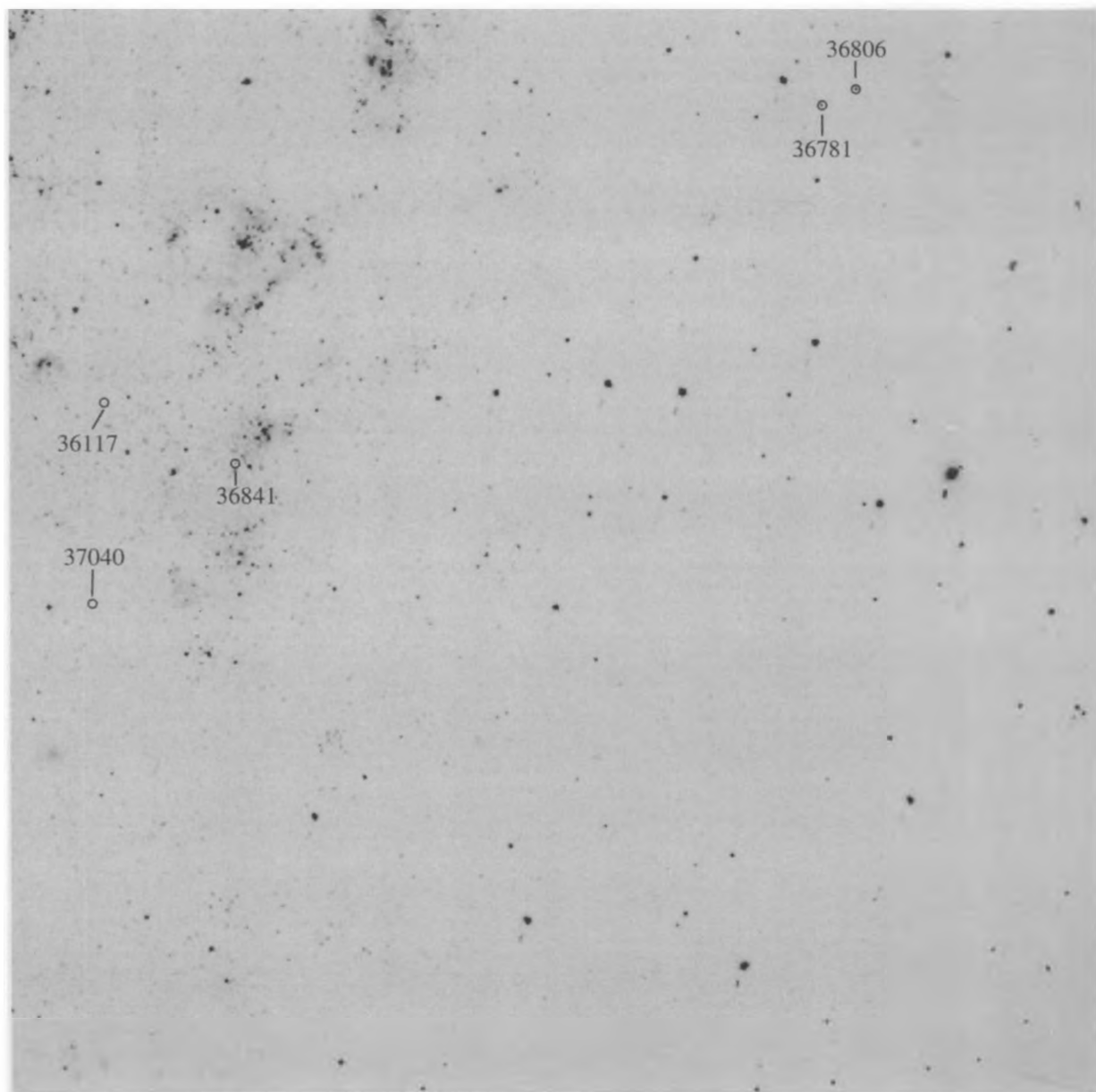
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Chart 29



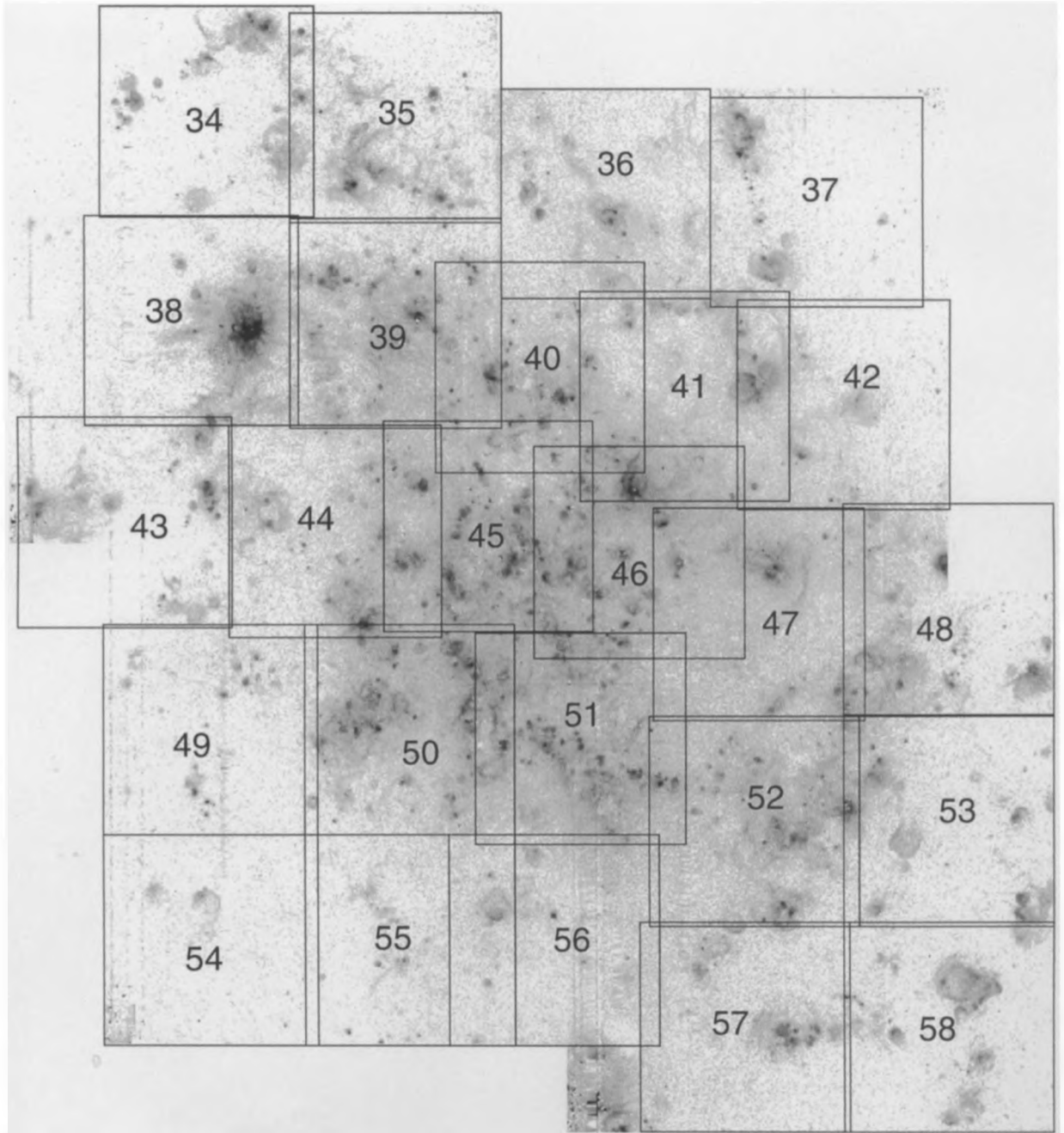
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Chart 30



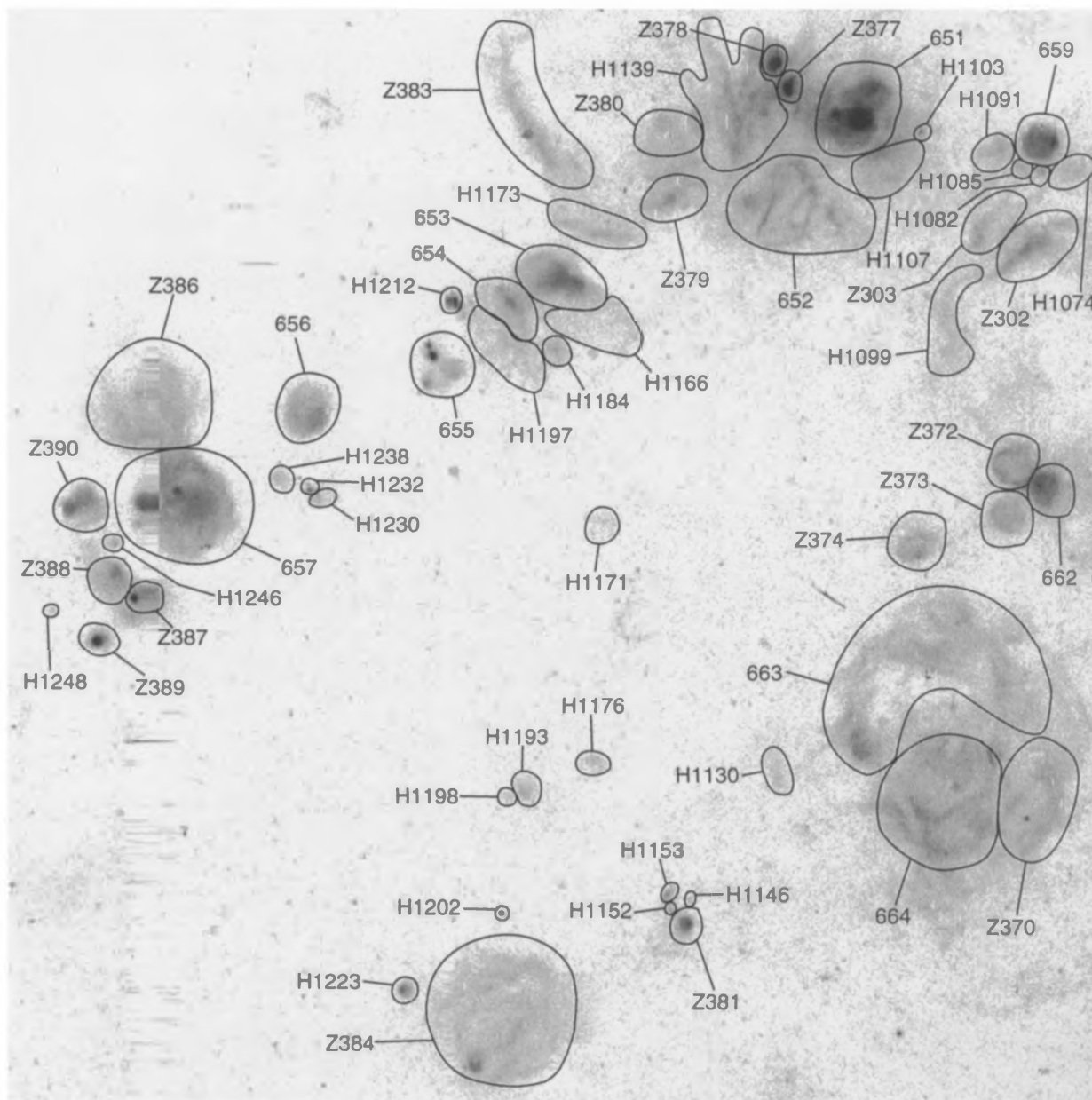
M33
Chart 32



M33
Chart 33

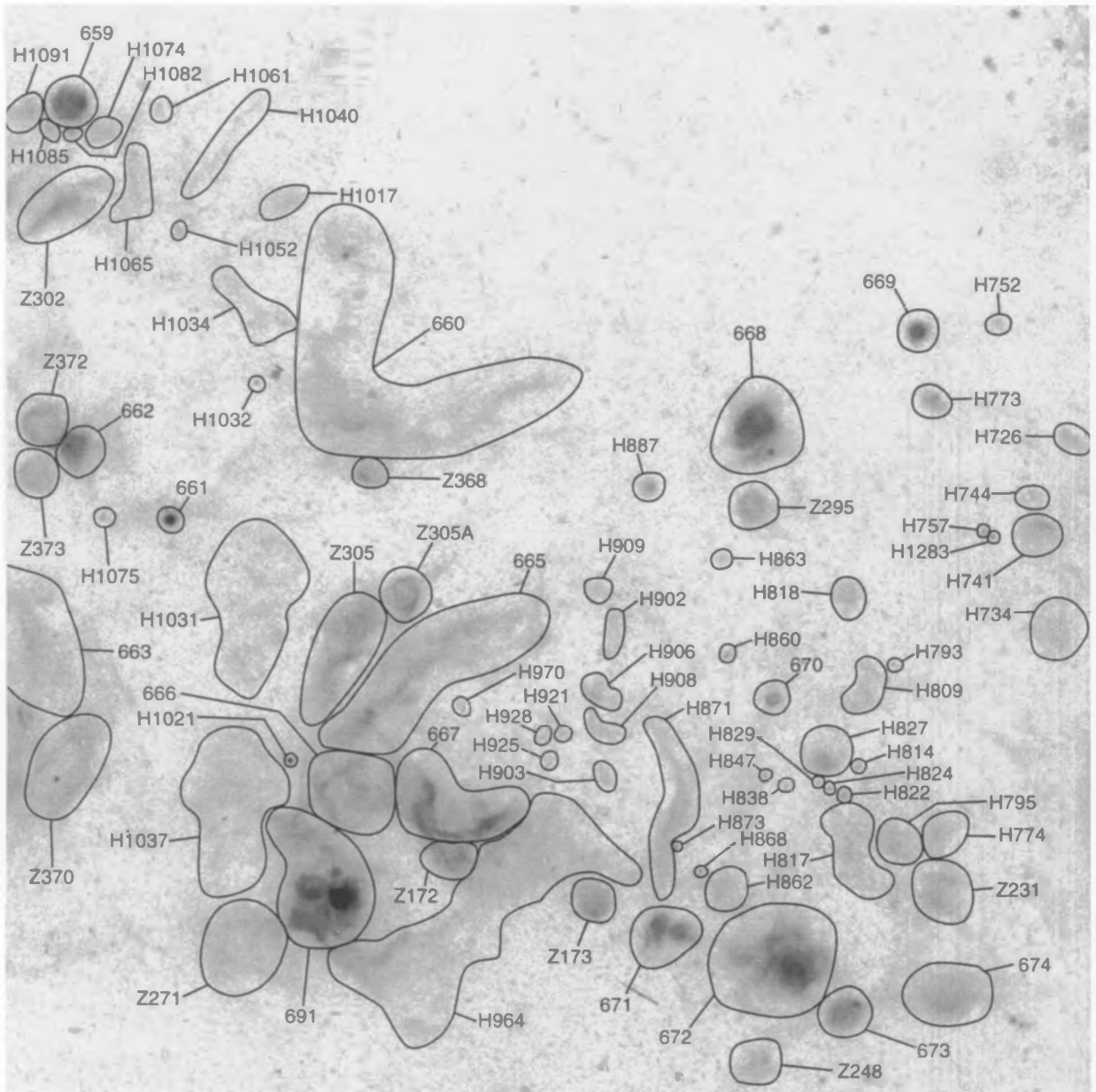


M33
Chart 34

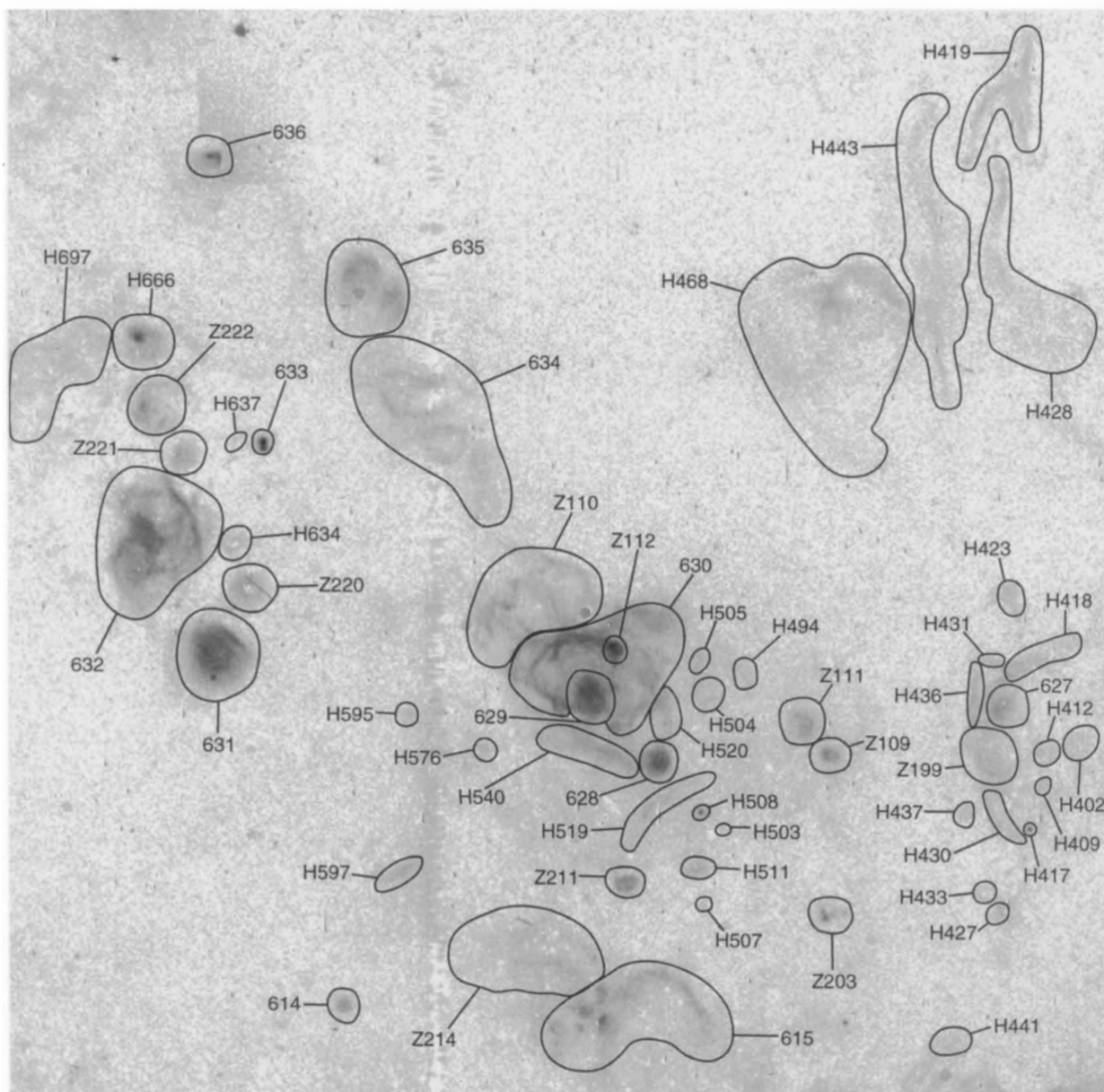


M33

Chart 35



M33
Chart 36



M33
Chart 37

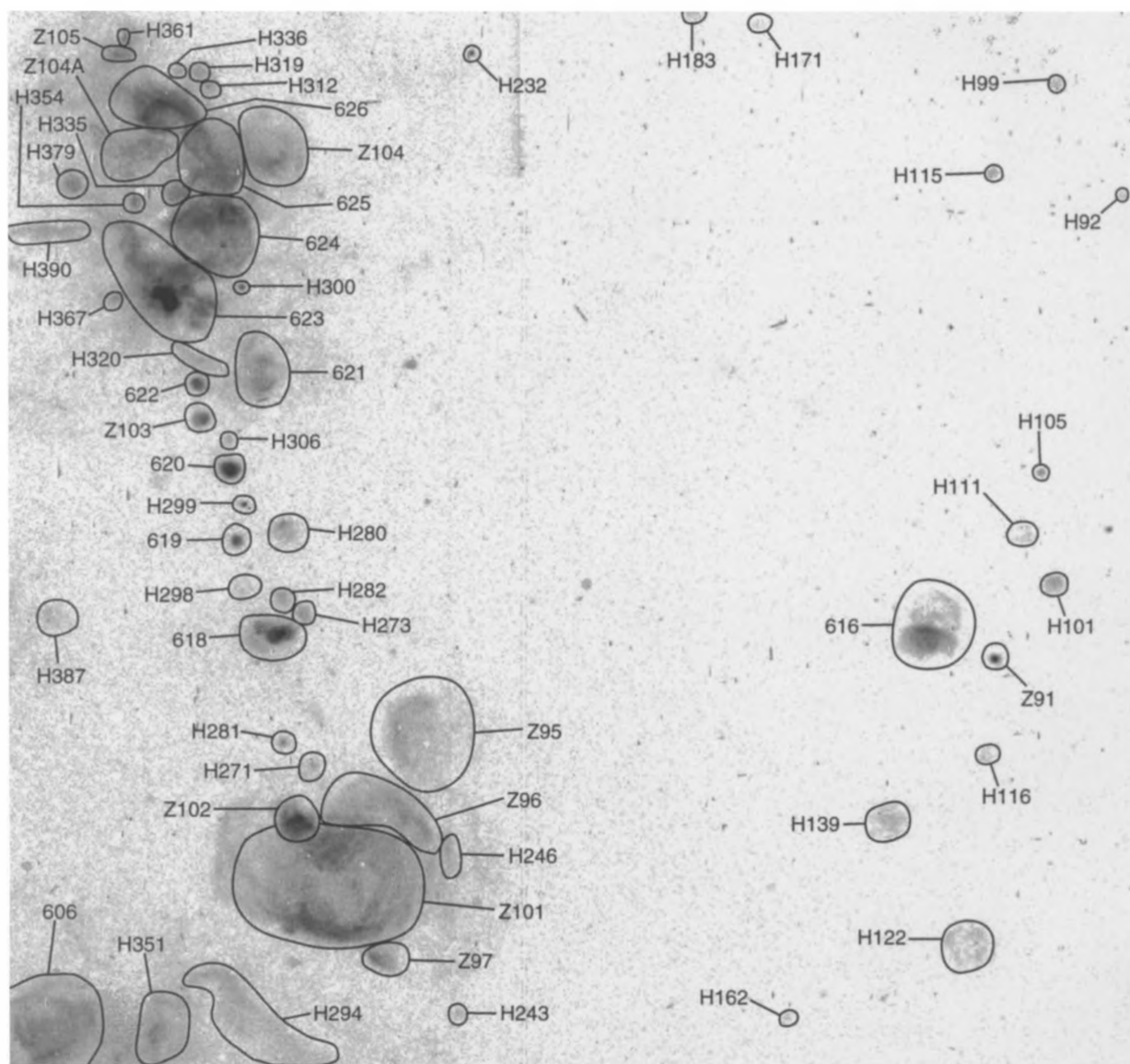
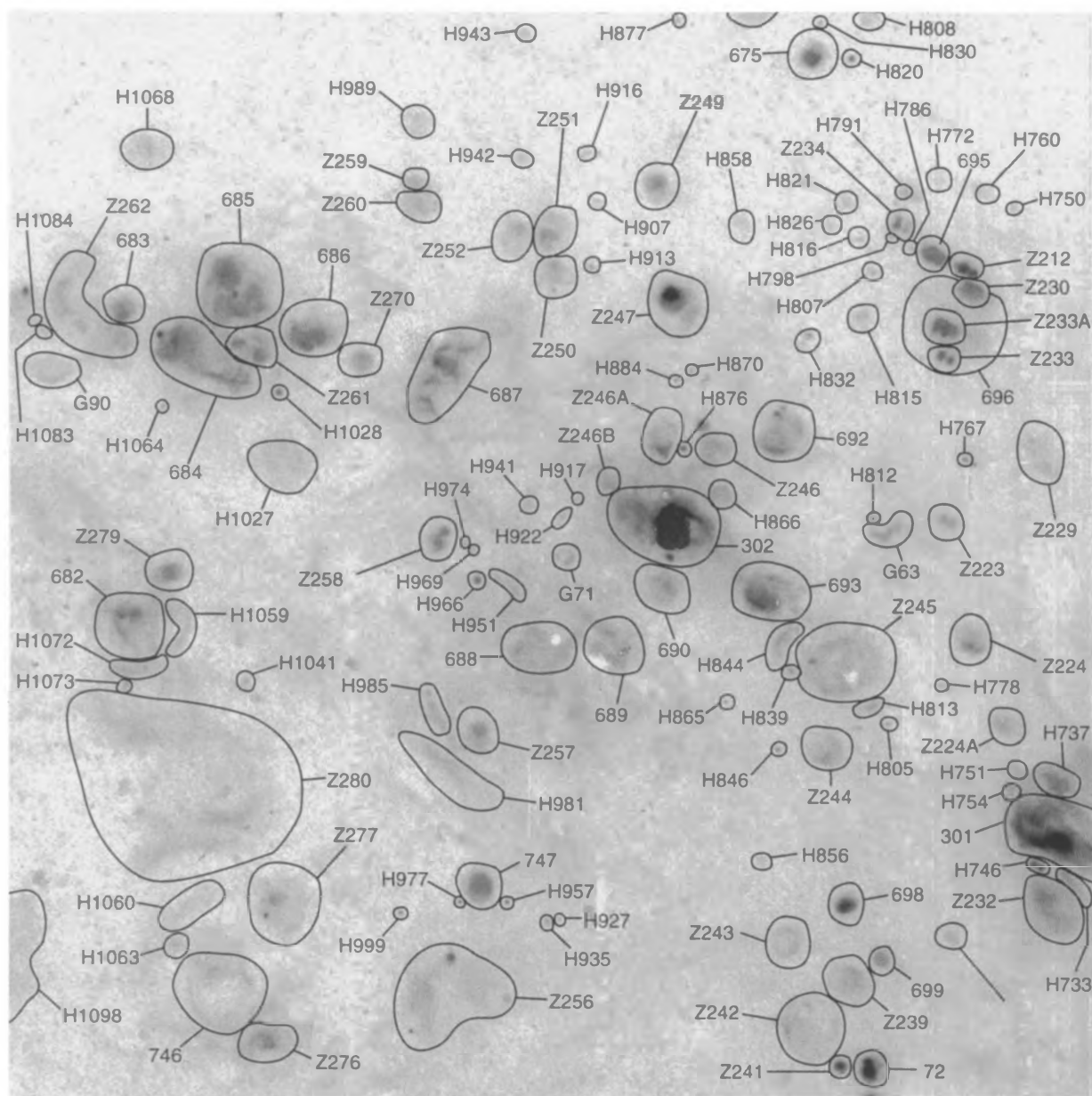
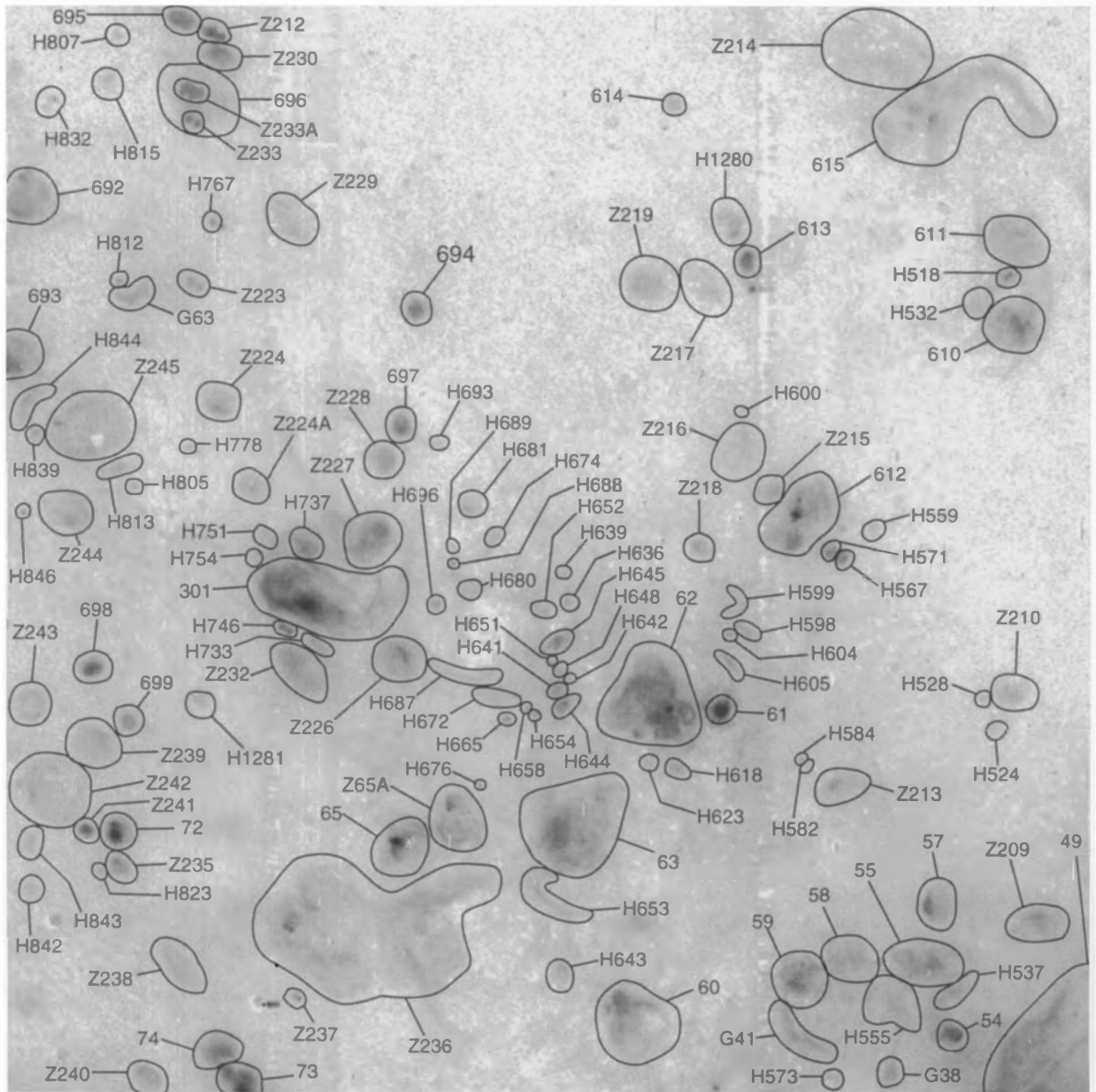


Chart 38

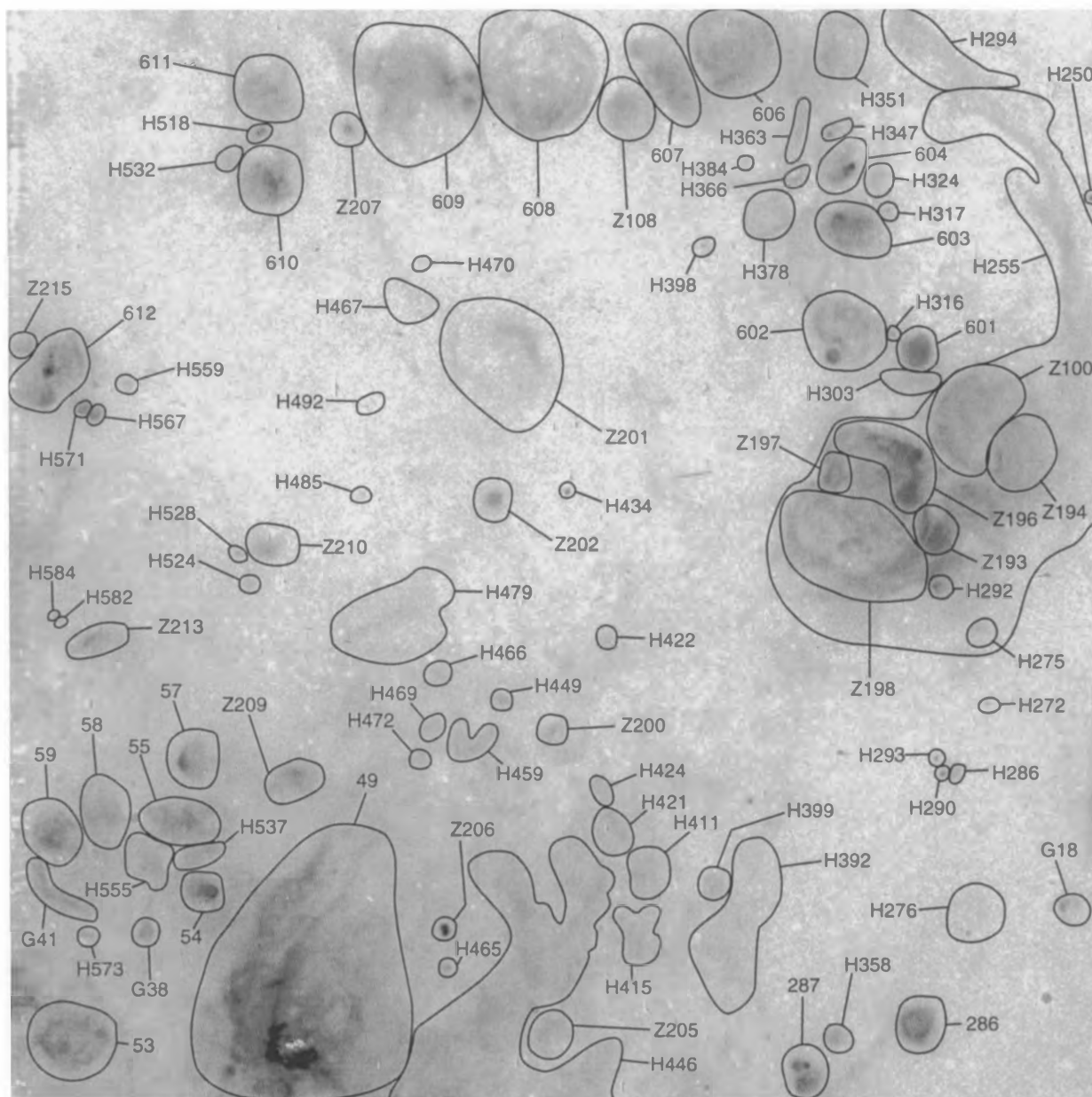
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Chart 39



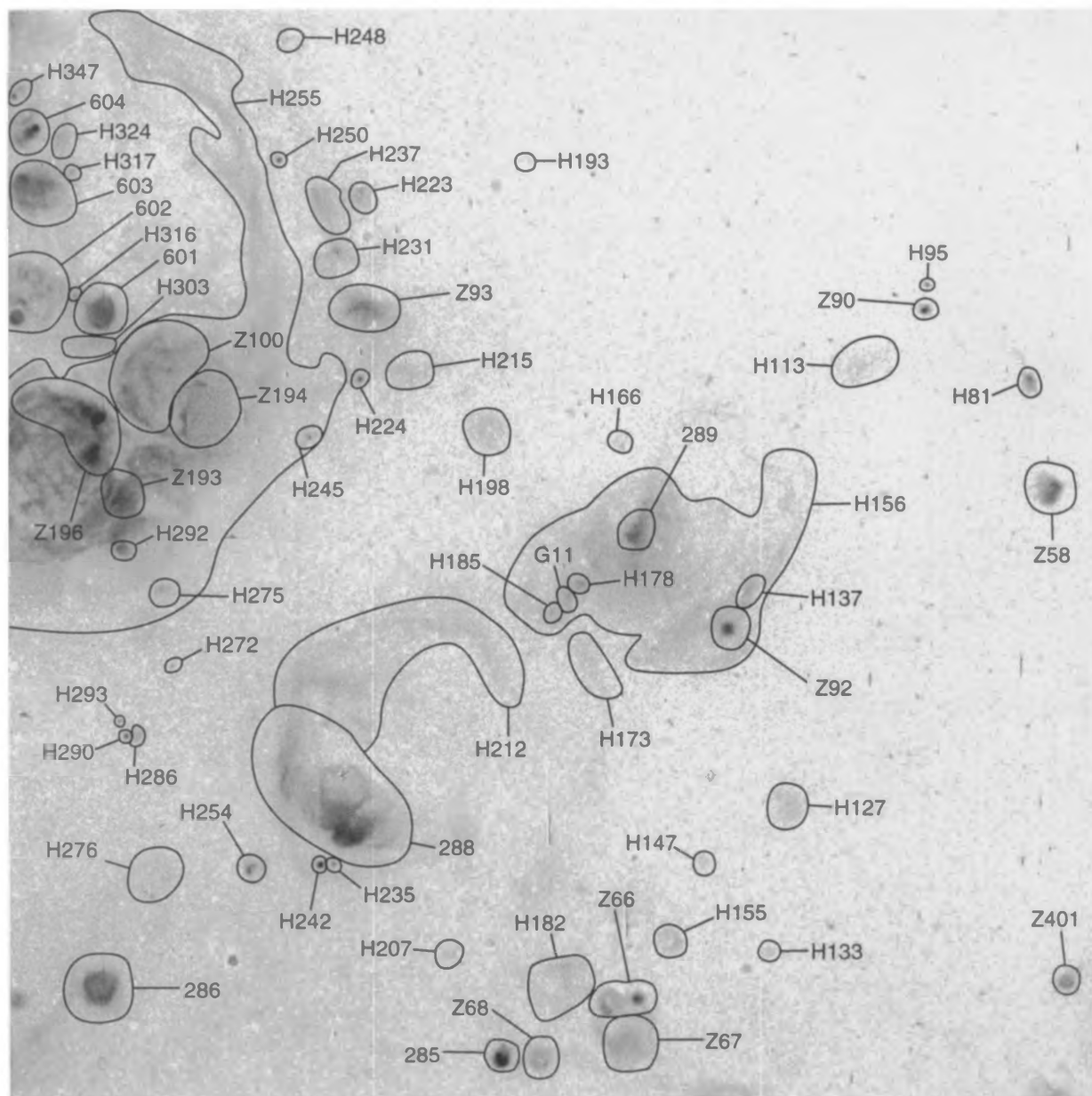
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Chart 40



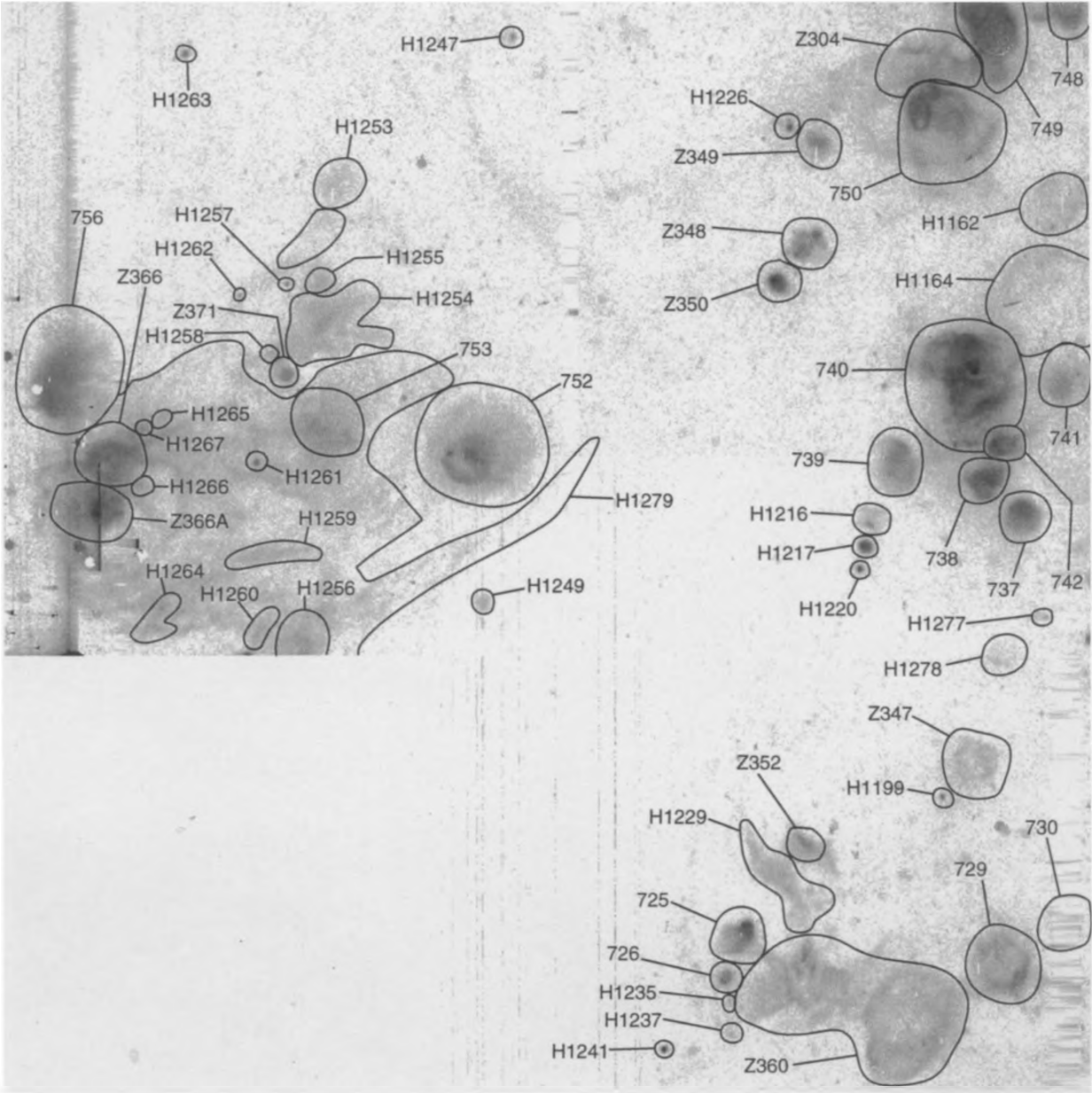
M33
Chart 41



M33
Chart 42



M33
Chart 43



M33

Chart 44

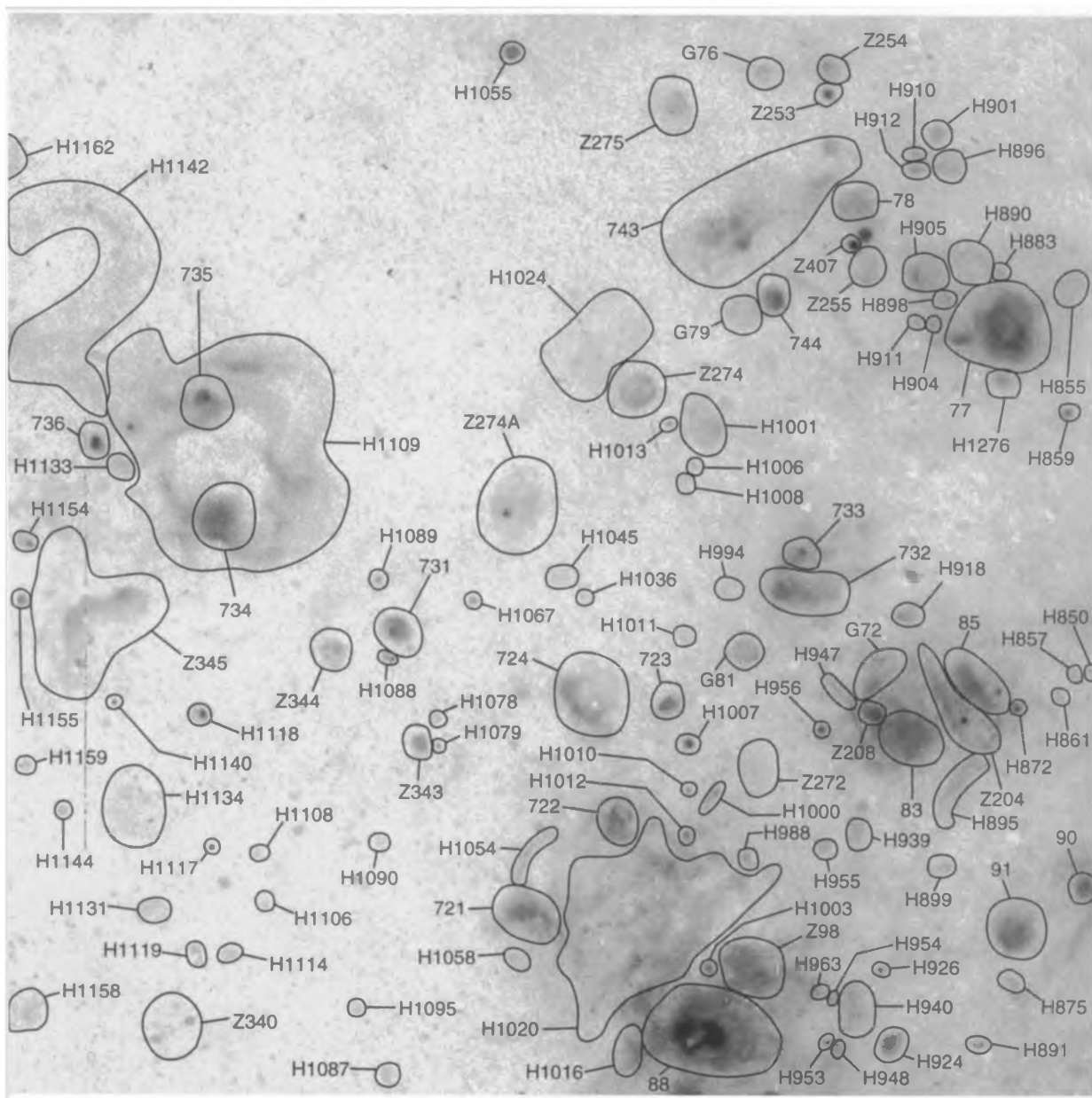


Chart 46

Chart 48

M33
Chart 49

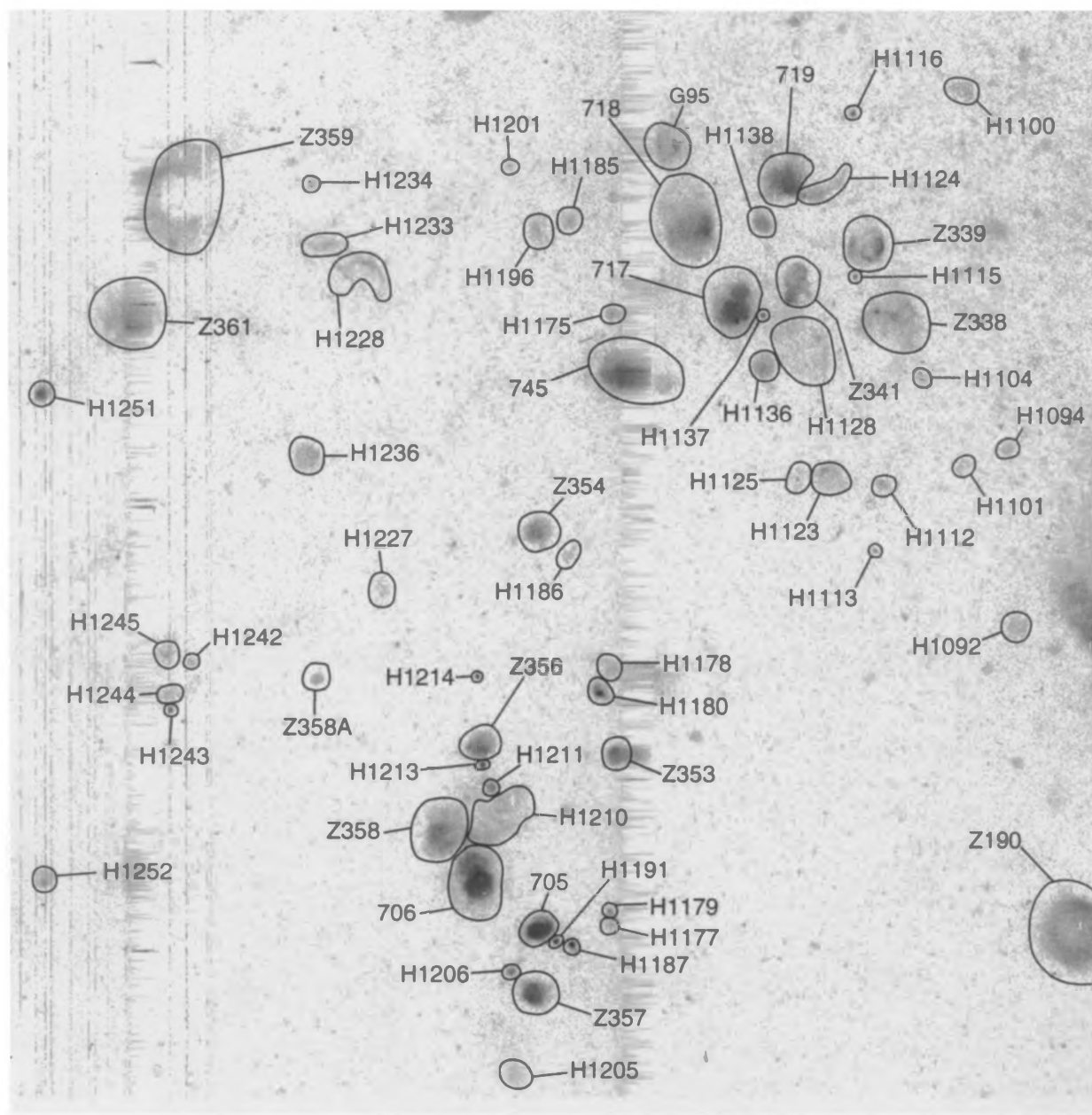
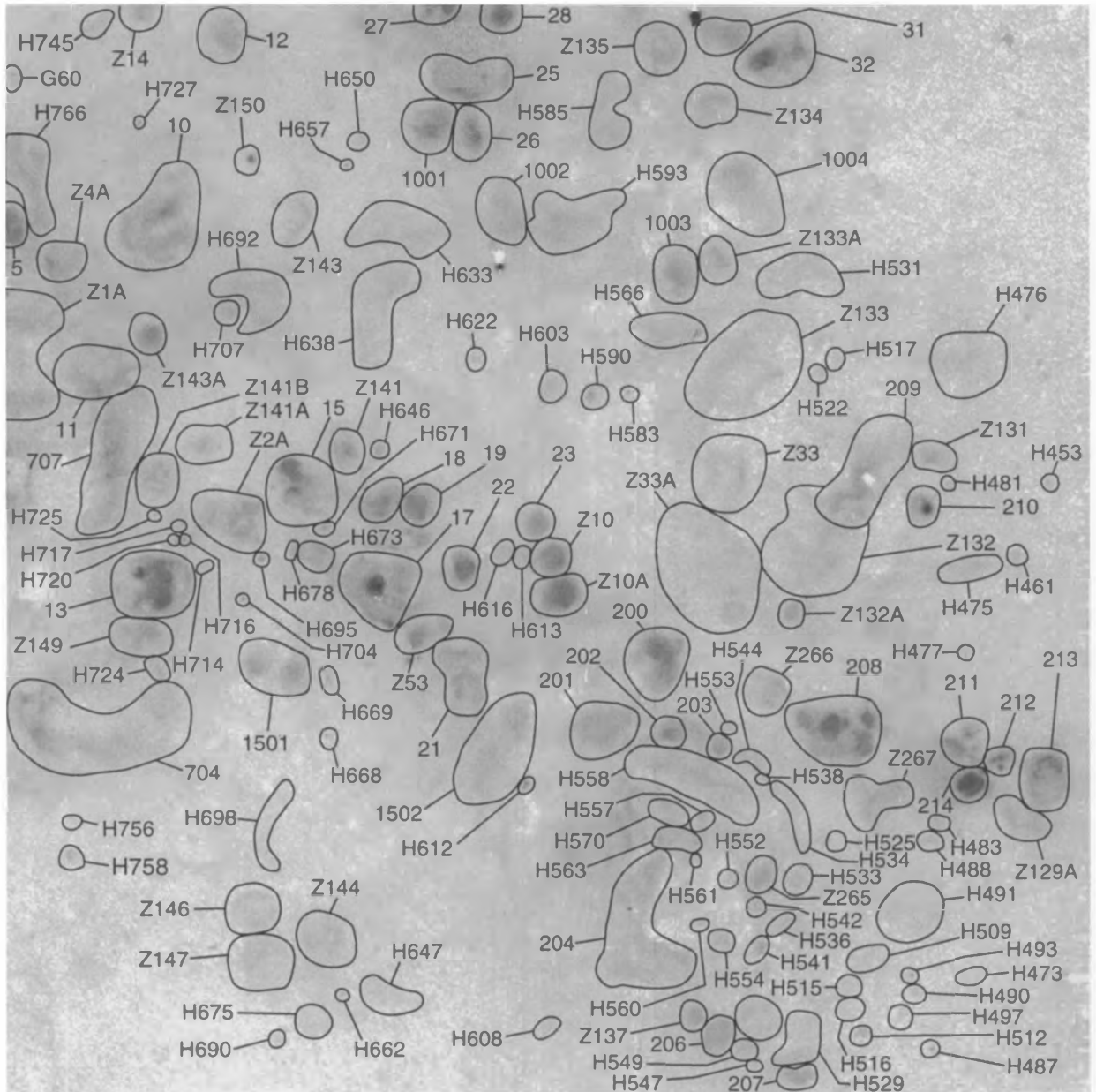


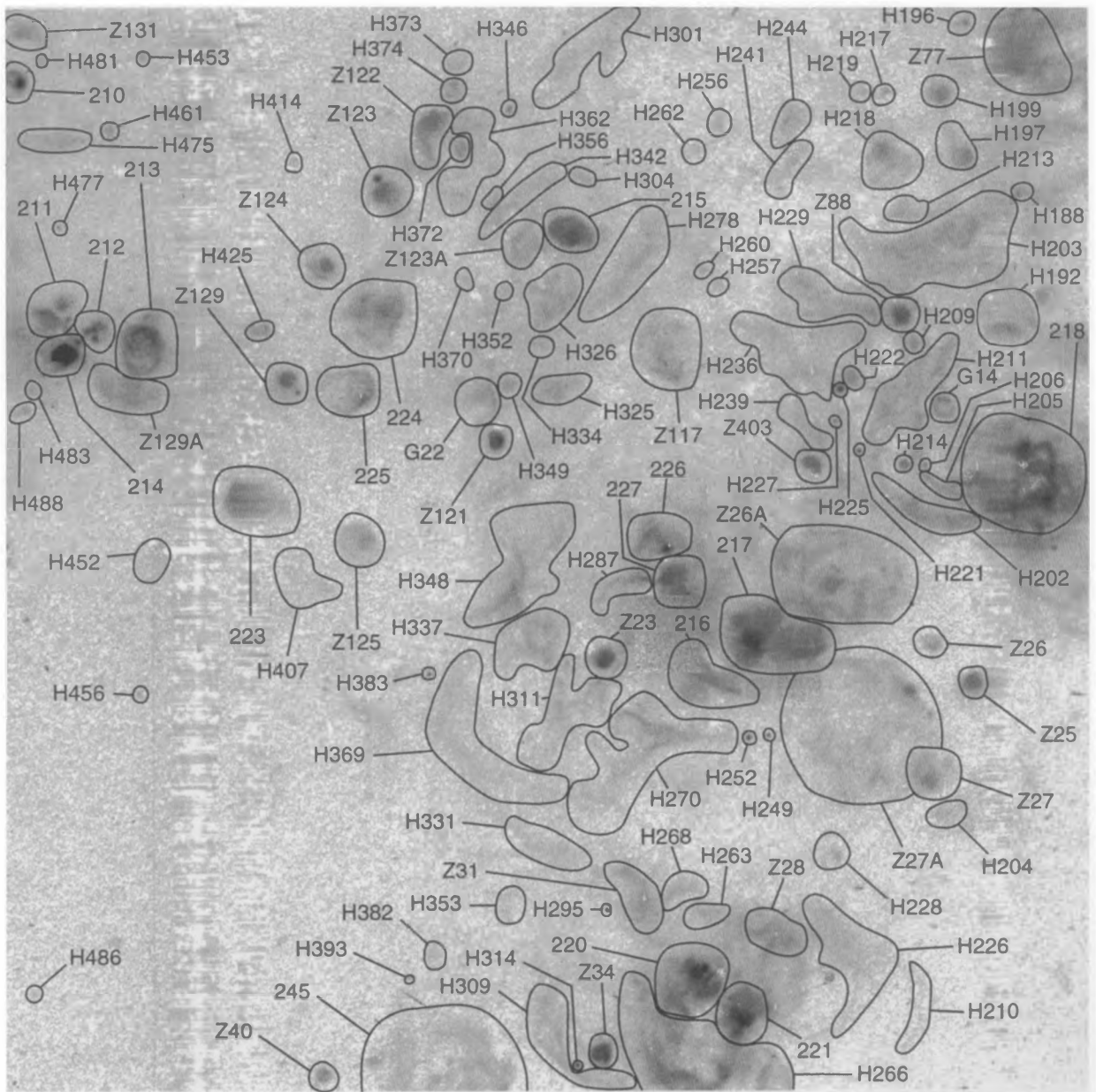
Chart 50

M33

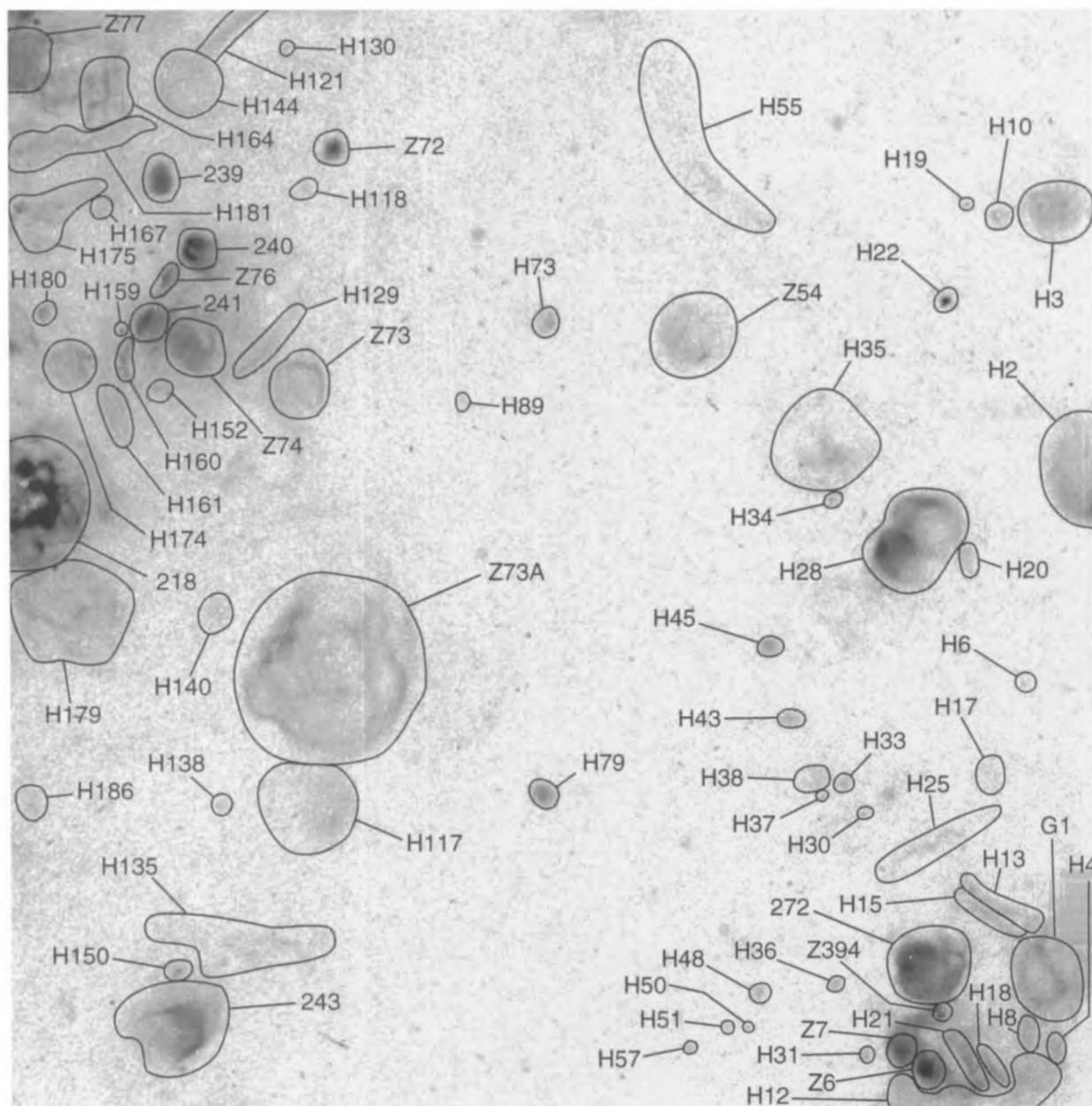
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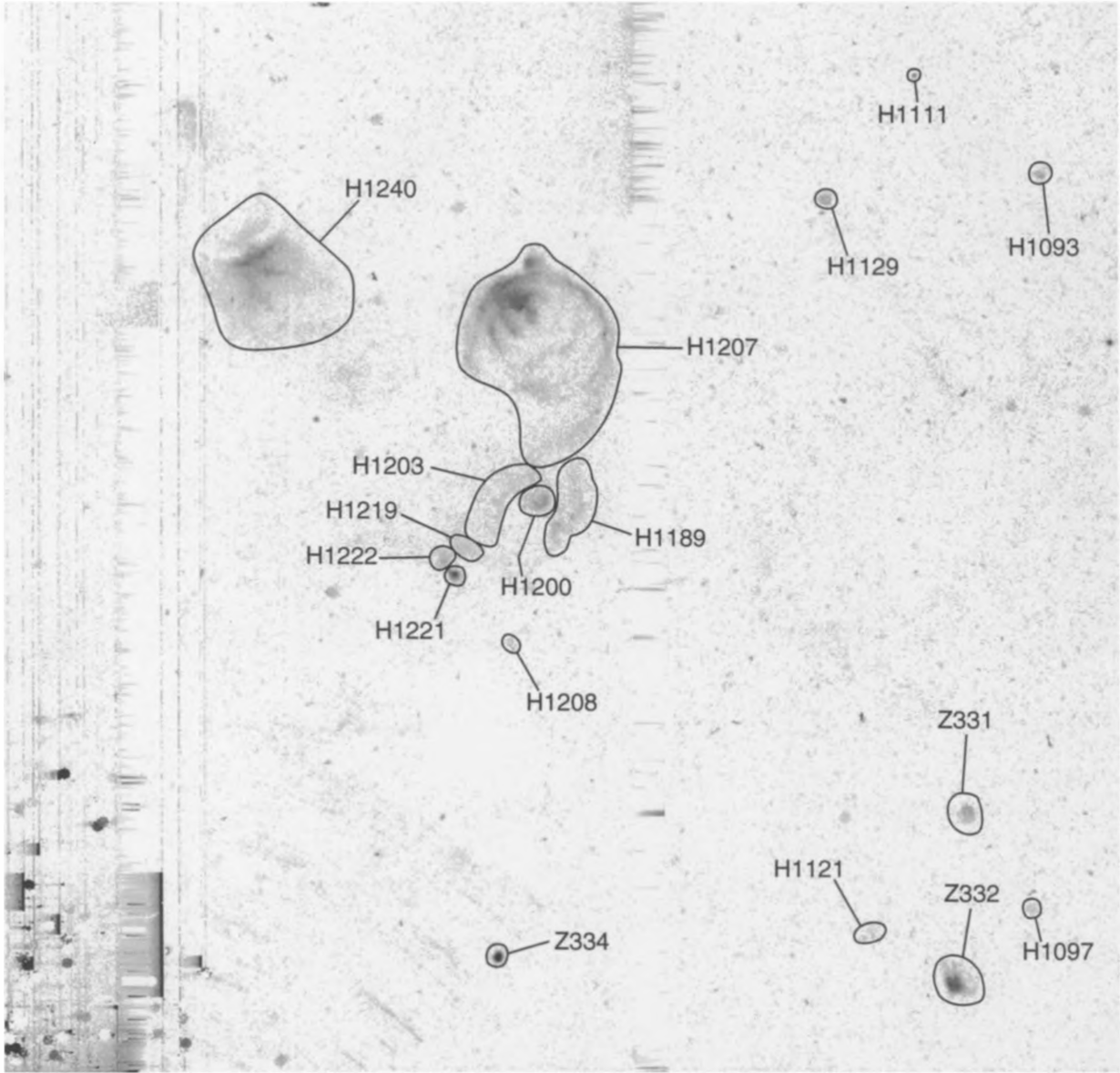
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Chart 52



M33
Chart 53

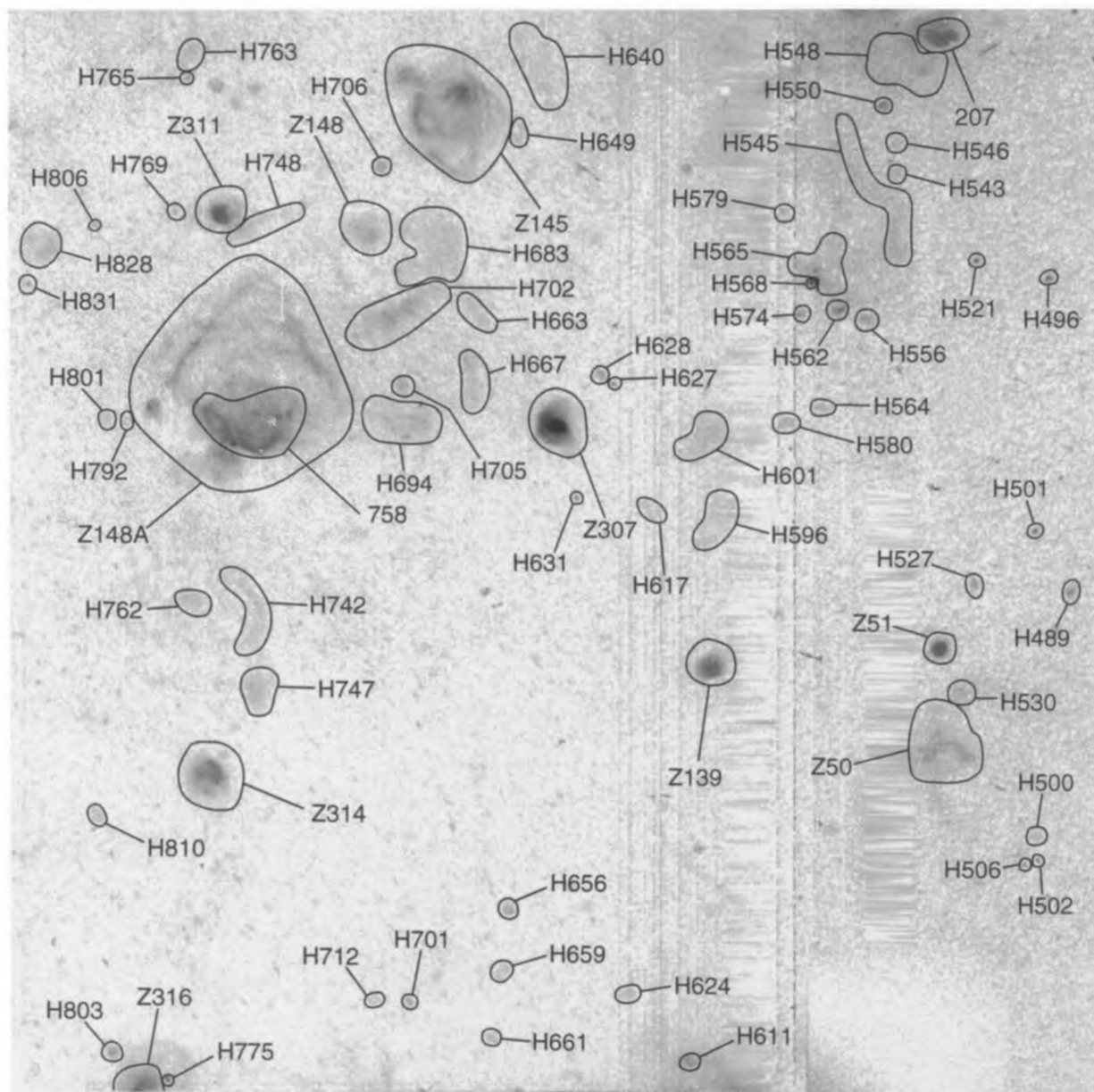


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Chart 54



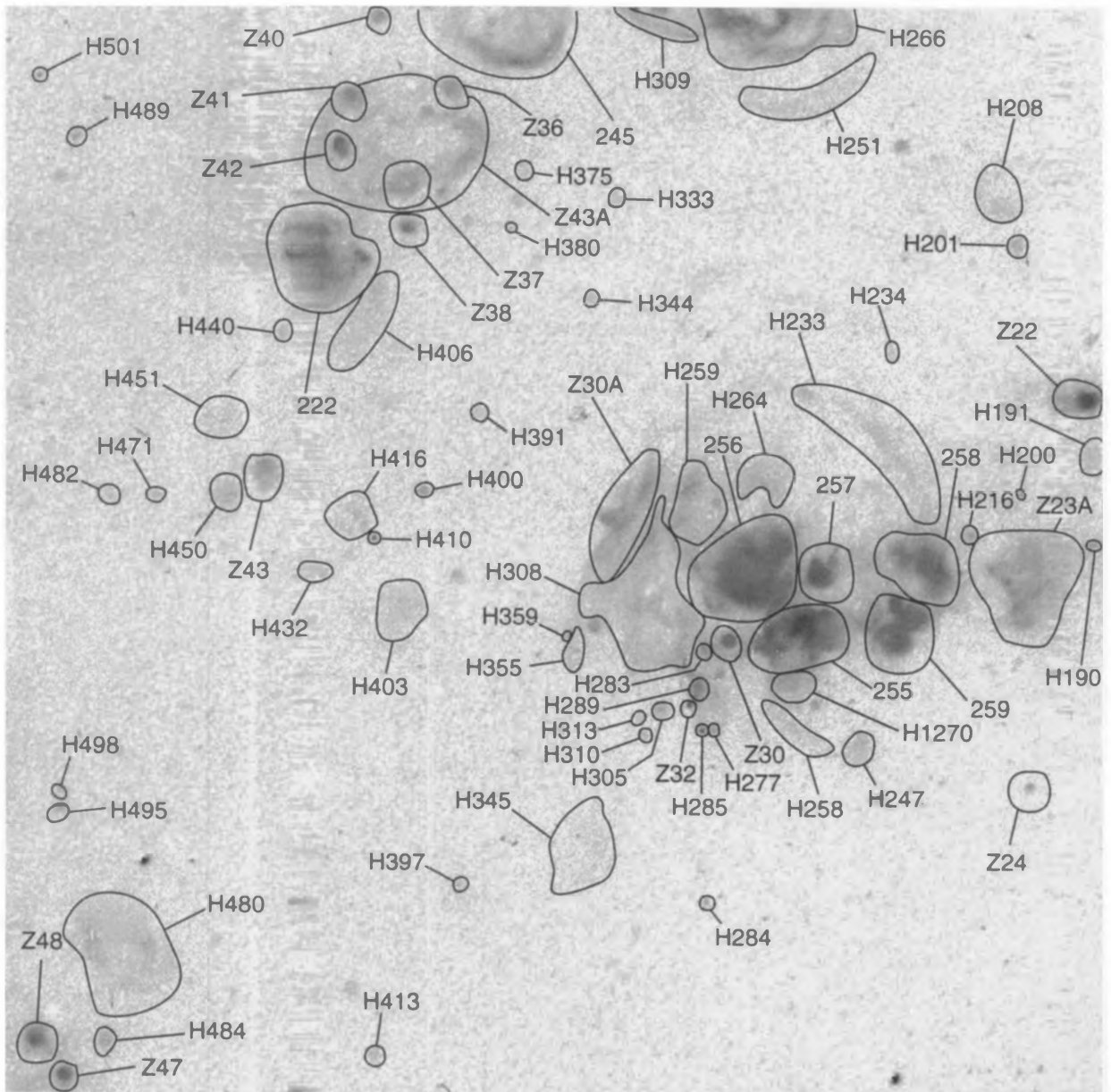
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Chart 56

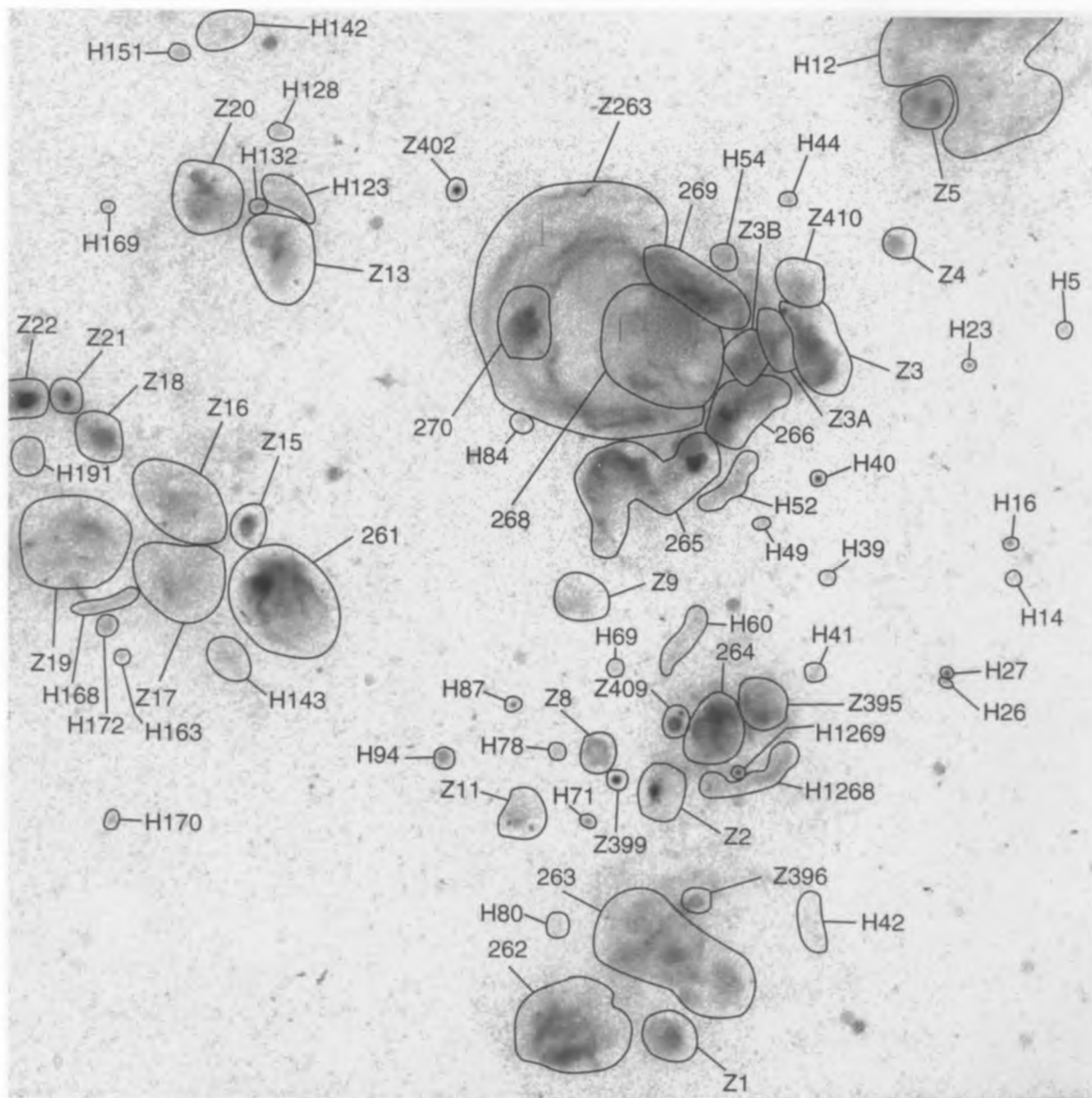


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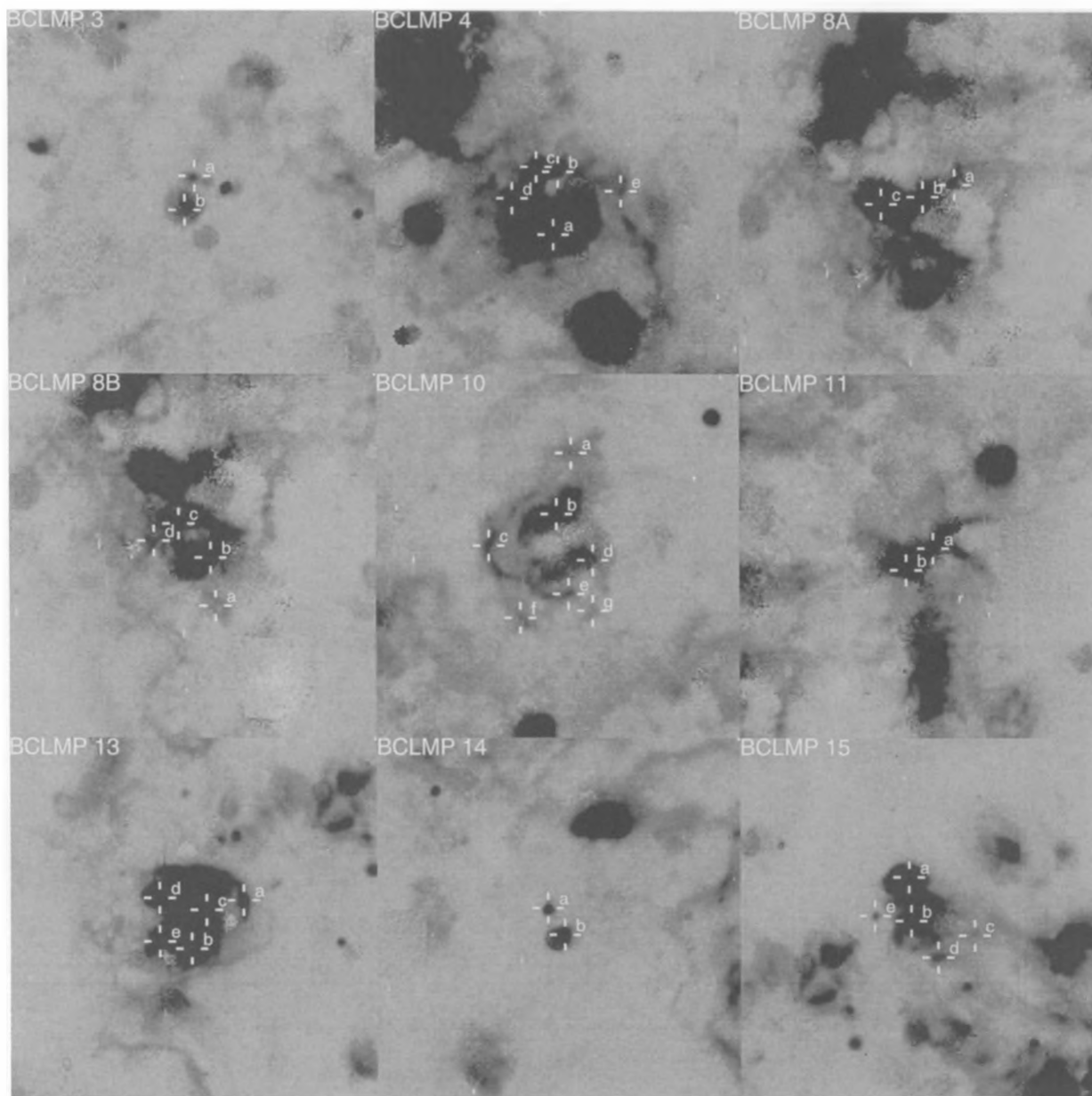
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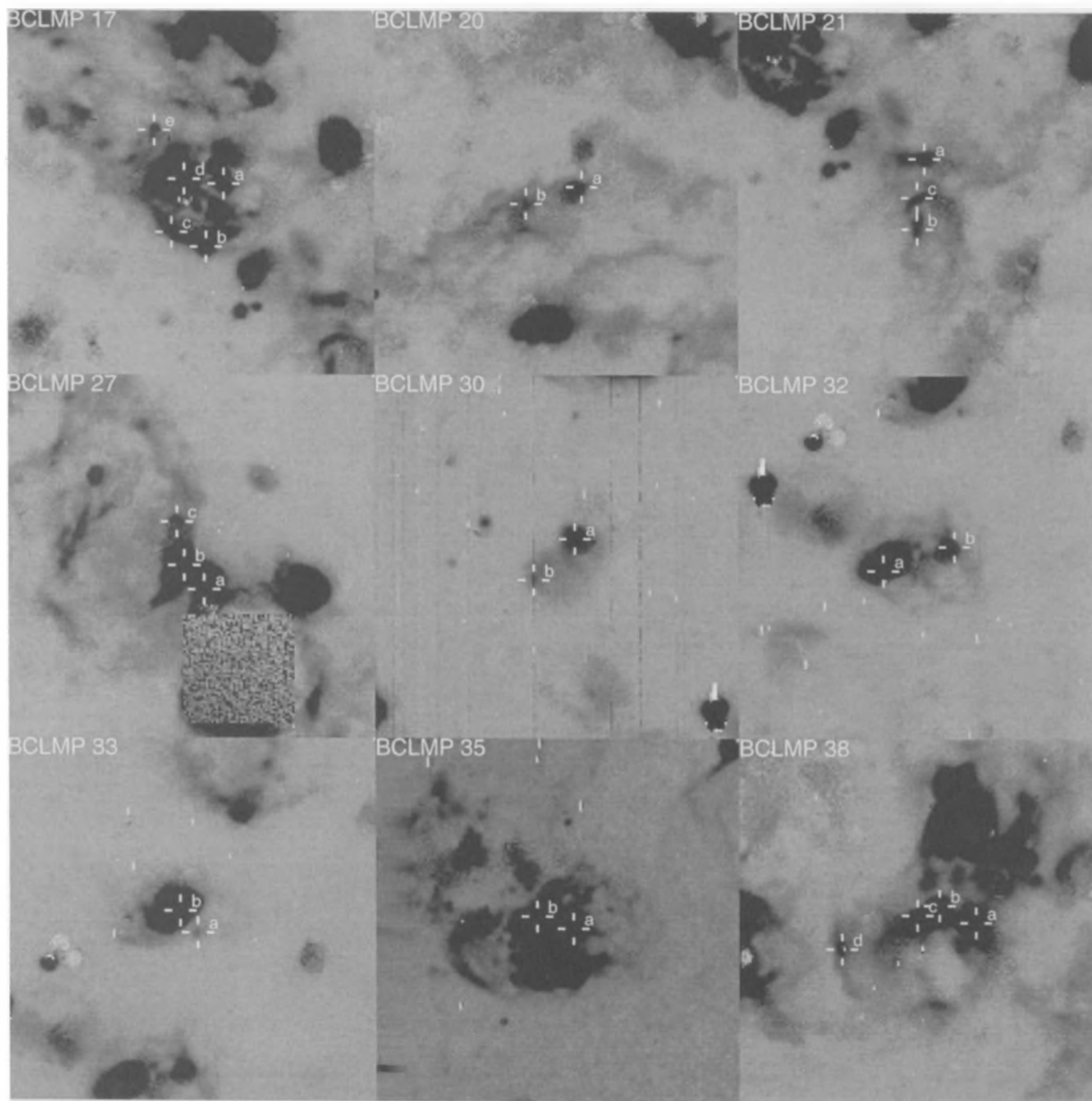
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Chart 58



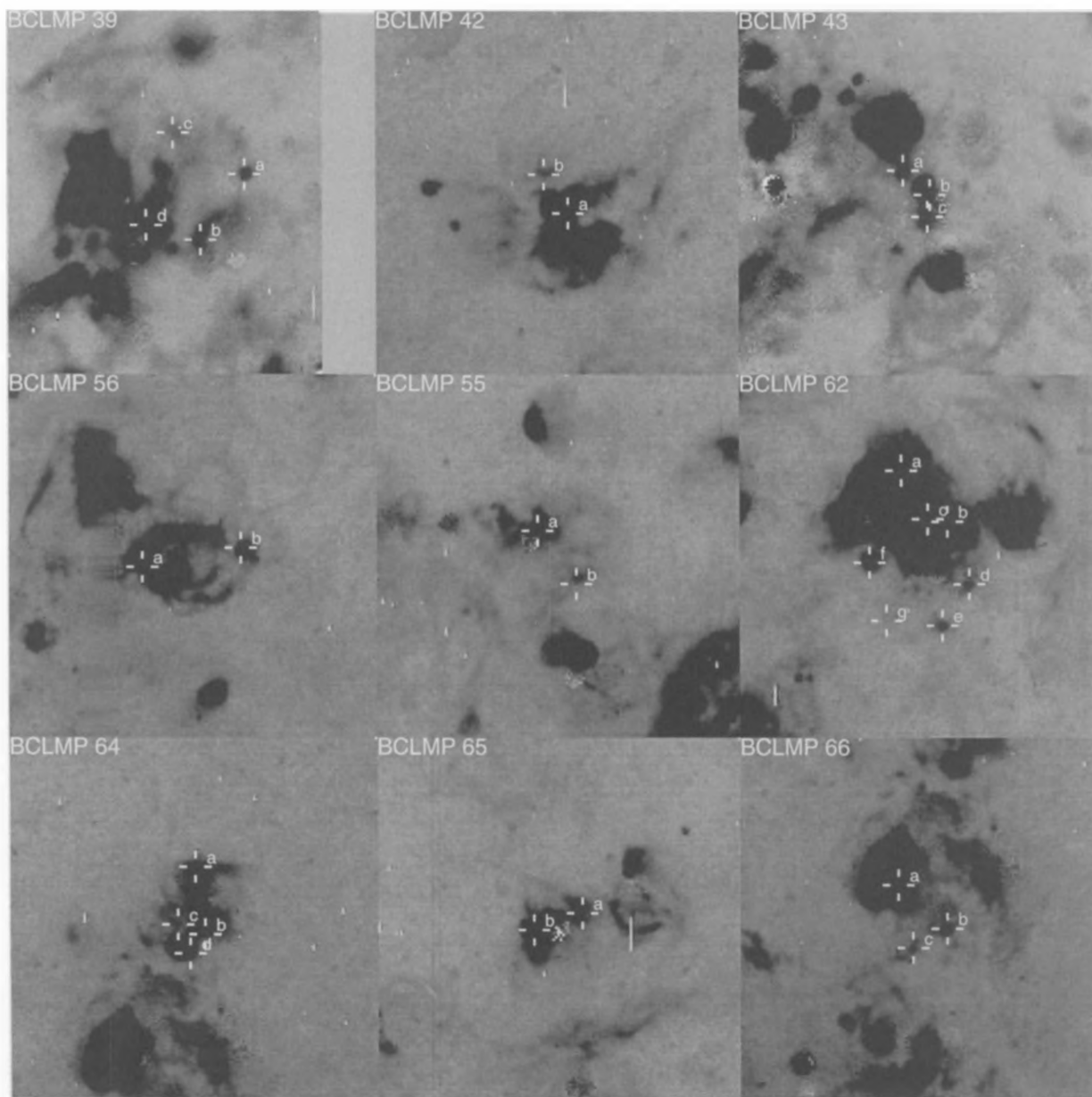
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Chart 59



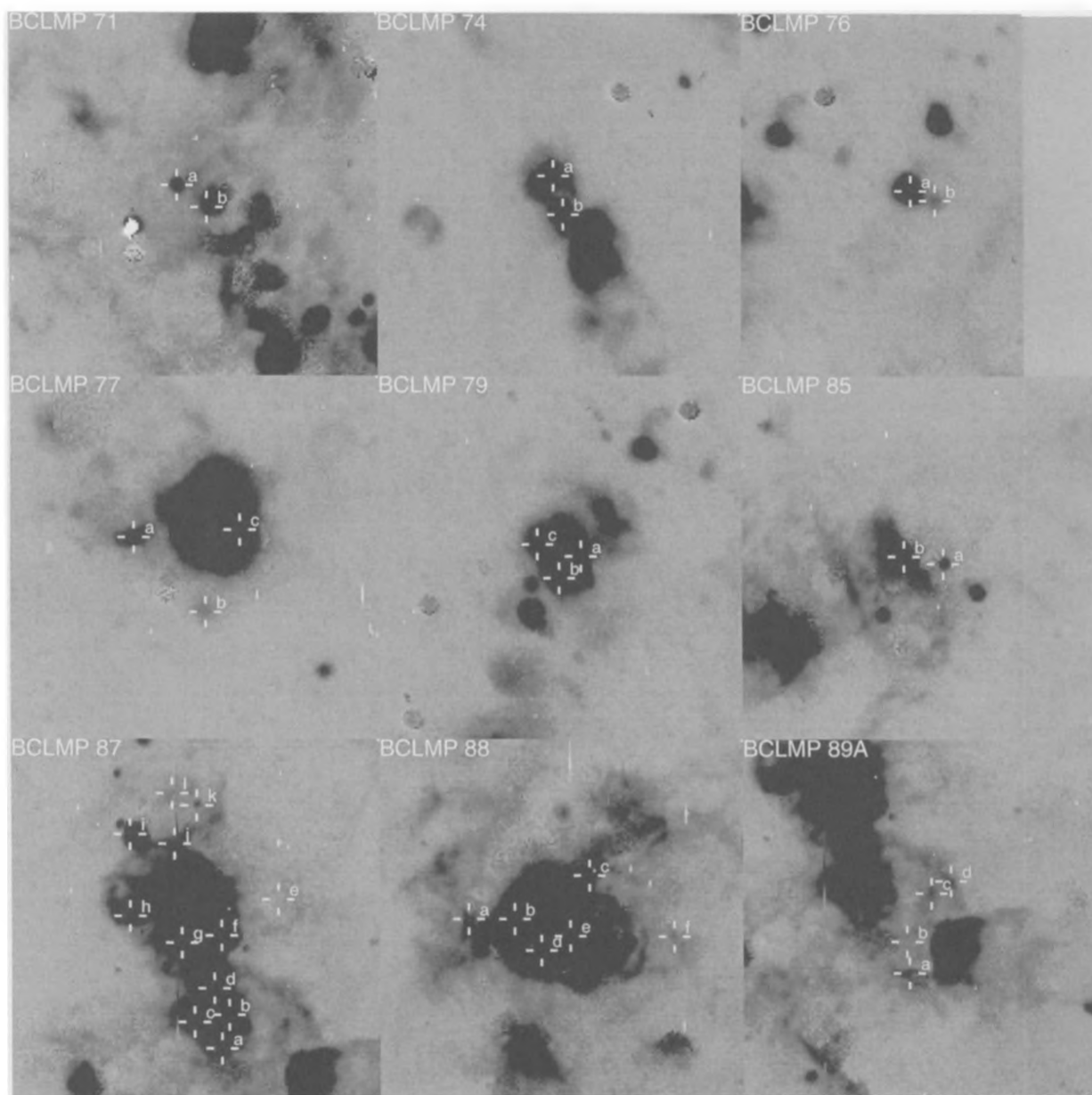
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Chart 60



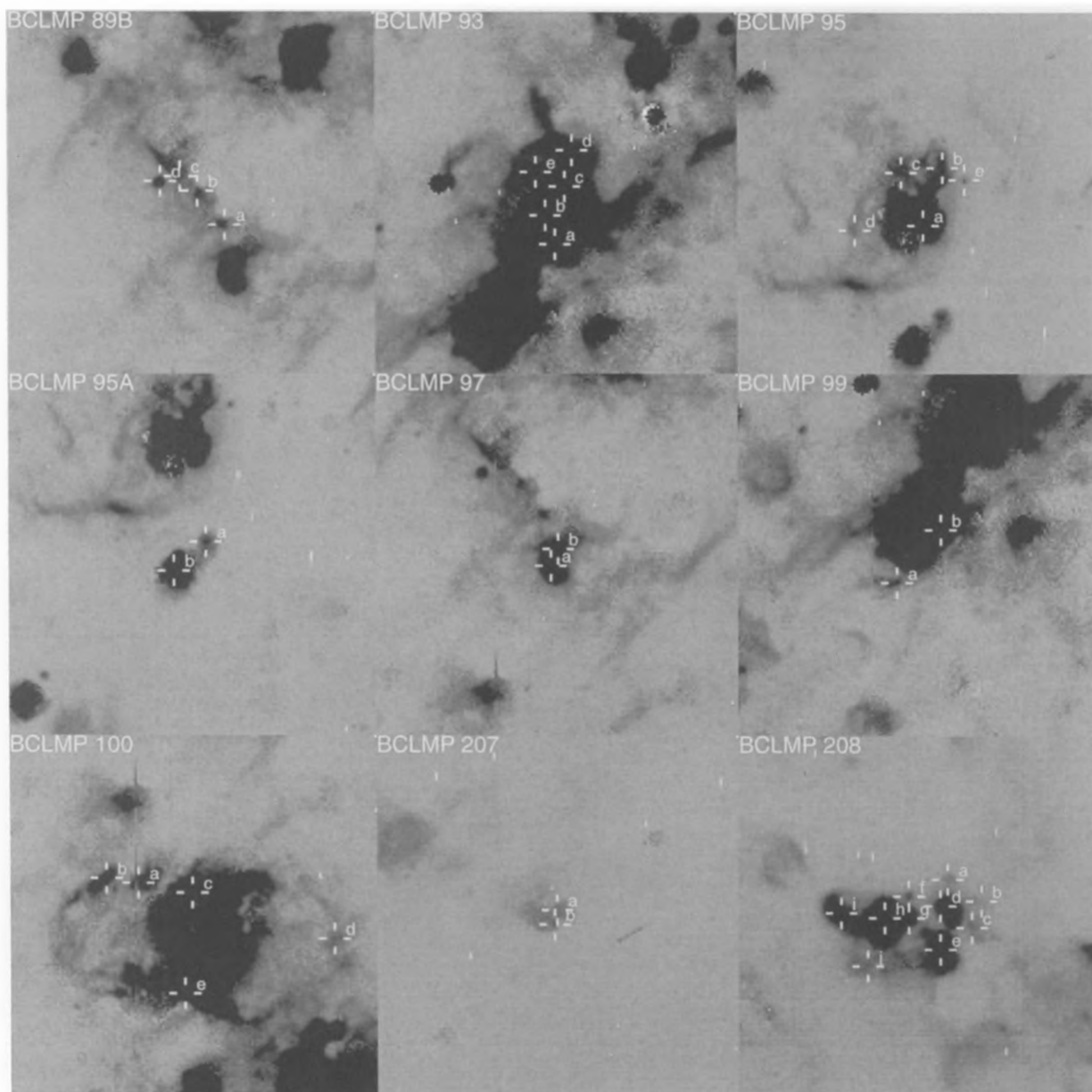
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Chart 61



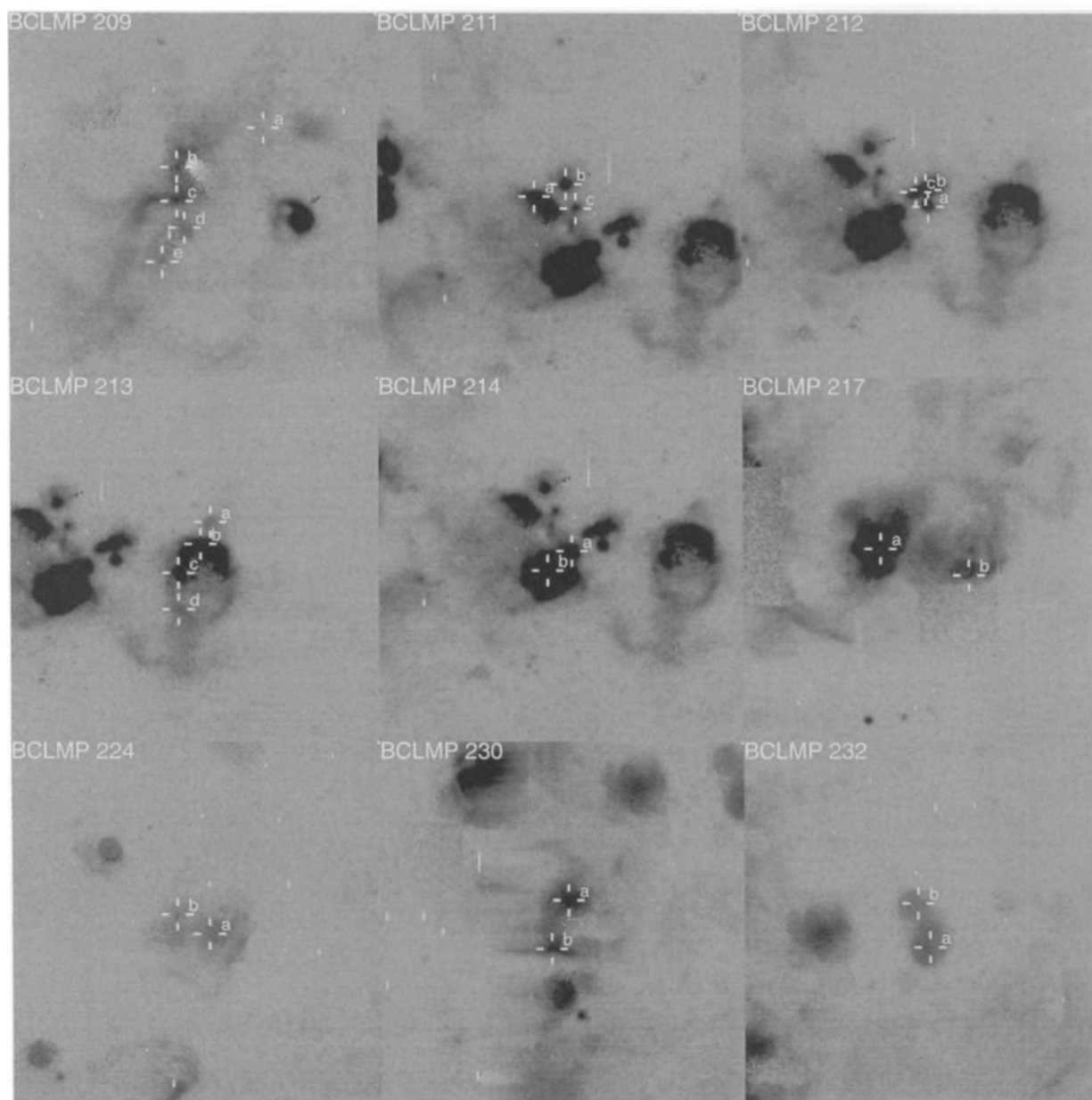
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Chart 62



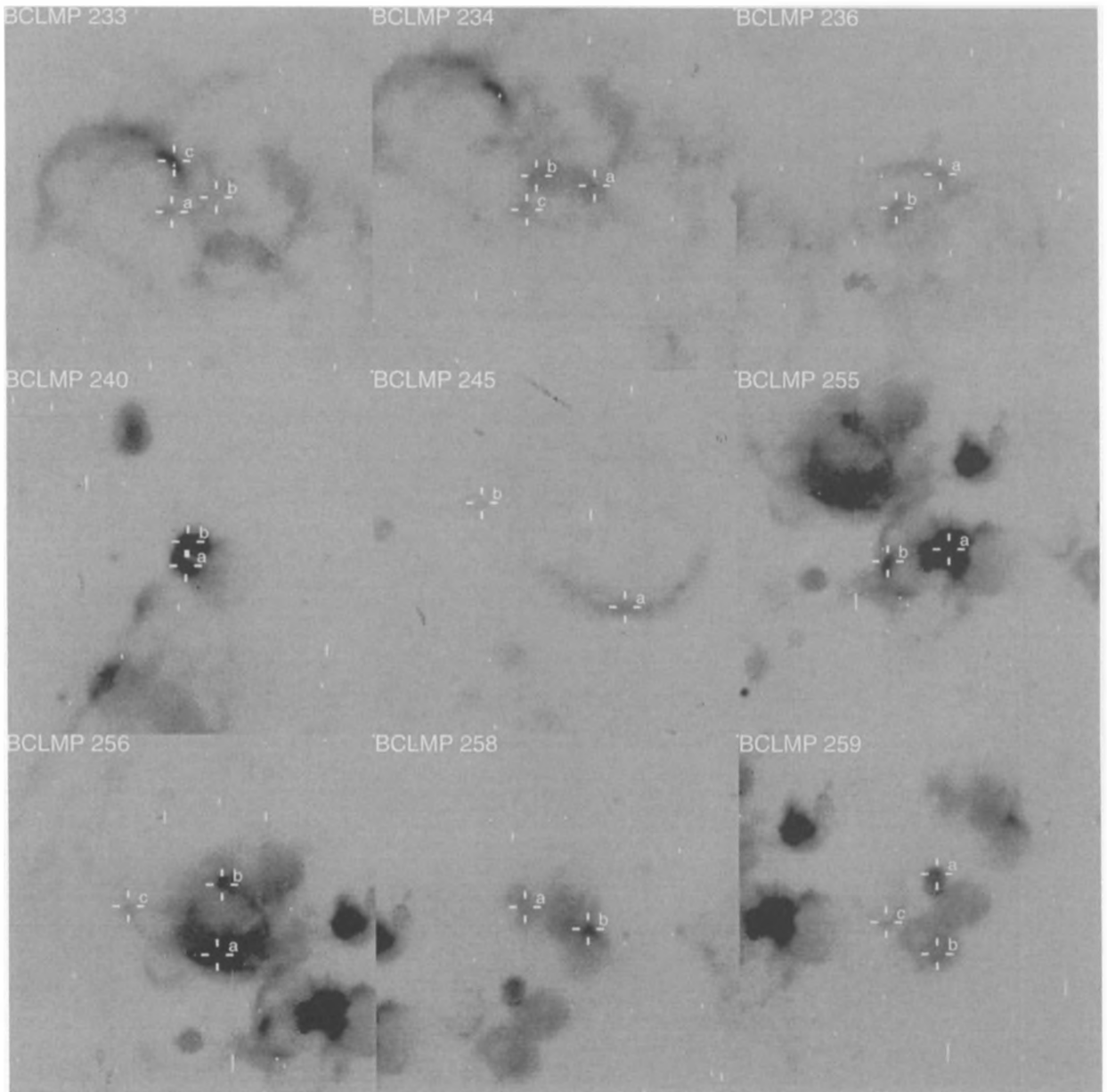
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Chart 63



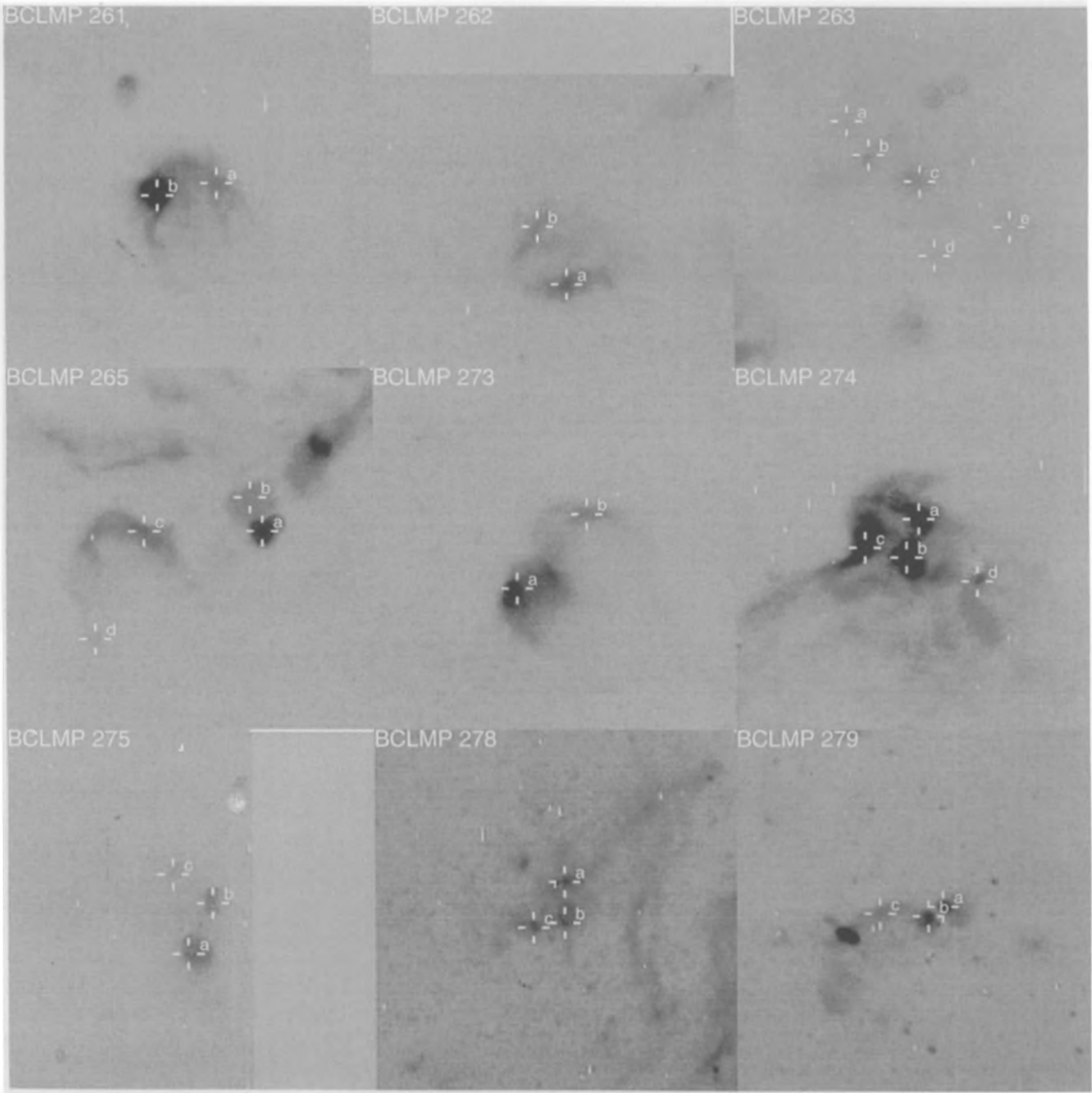
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Chart 64



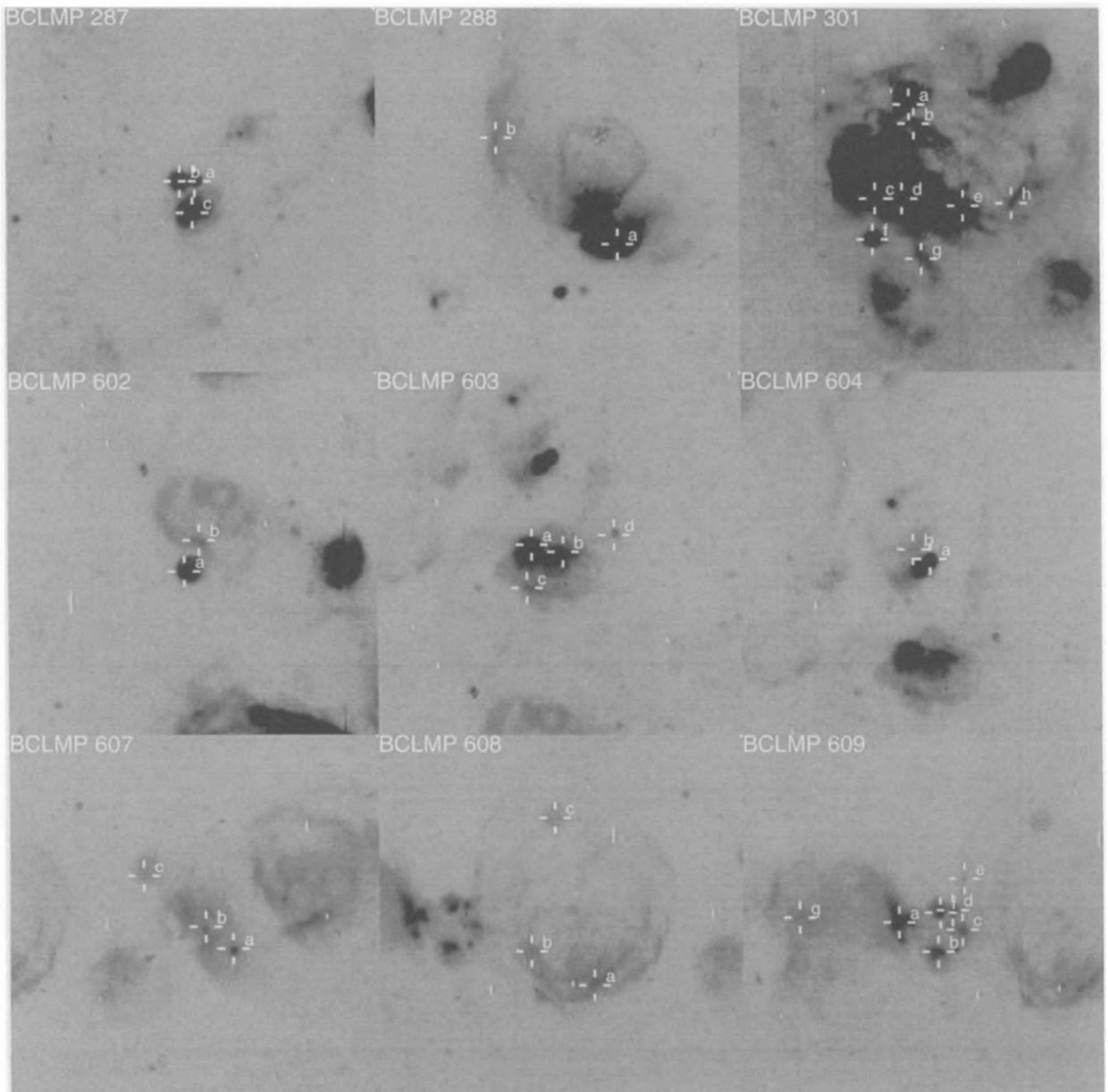
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Chart 65



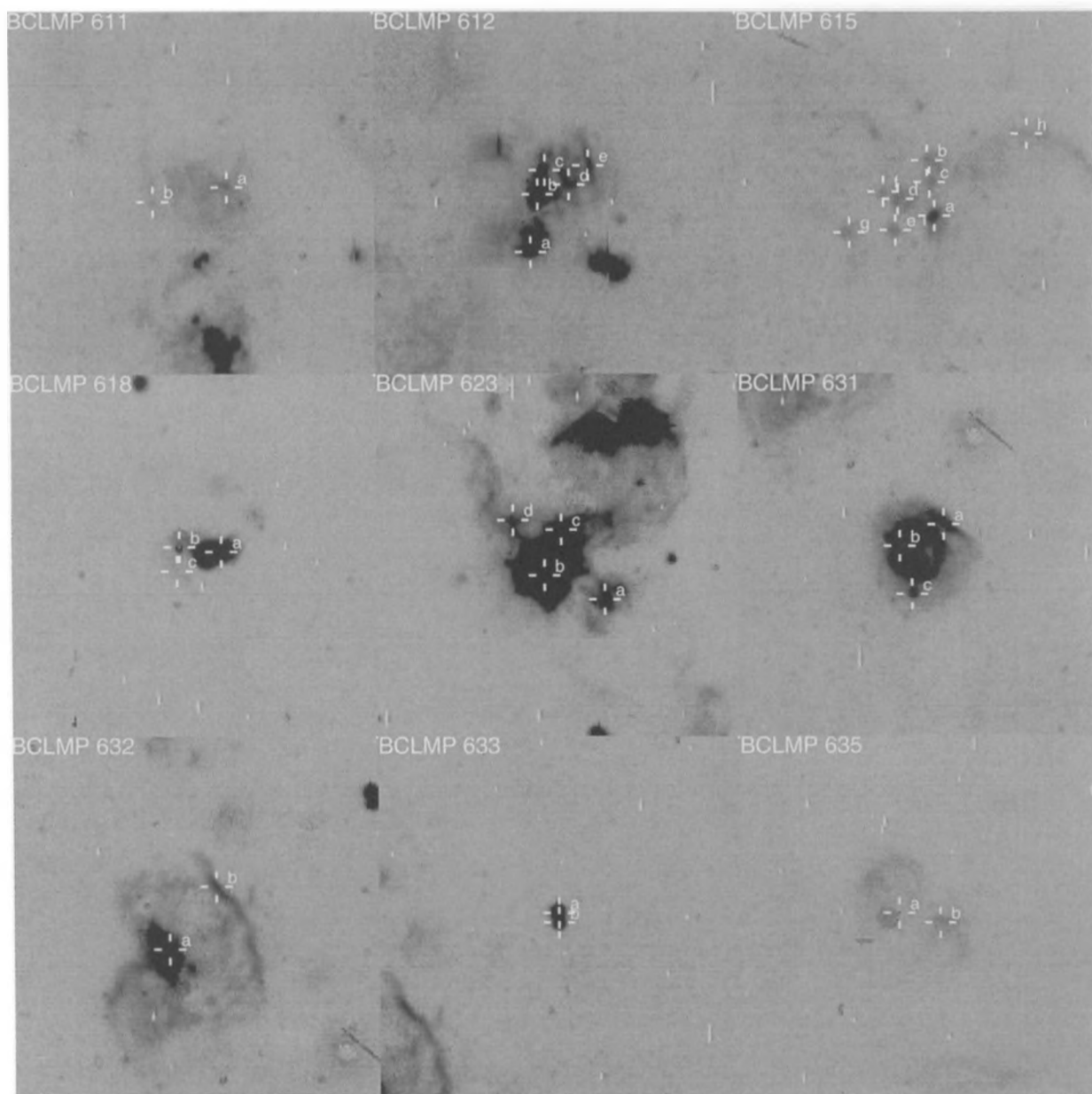
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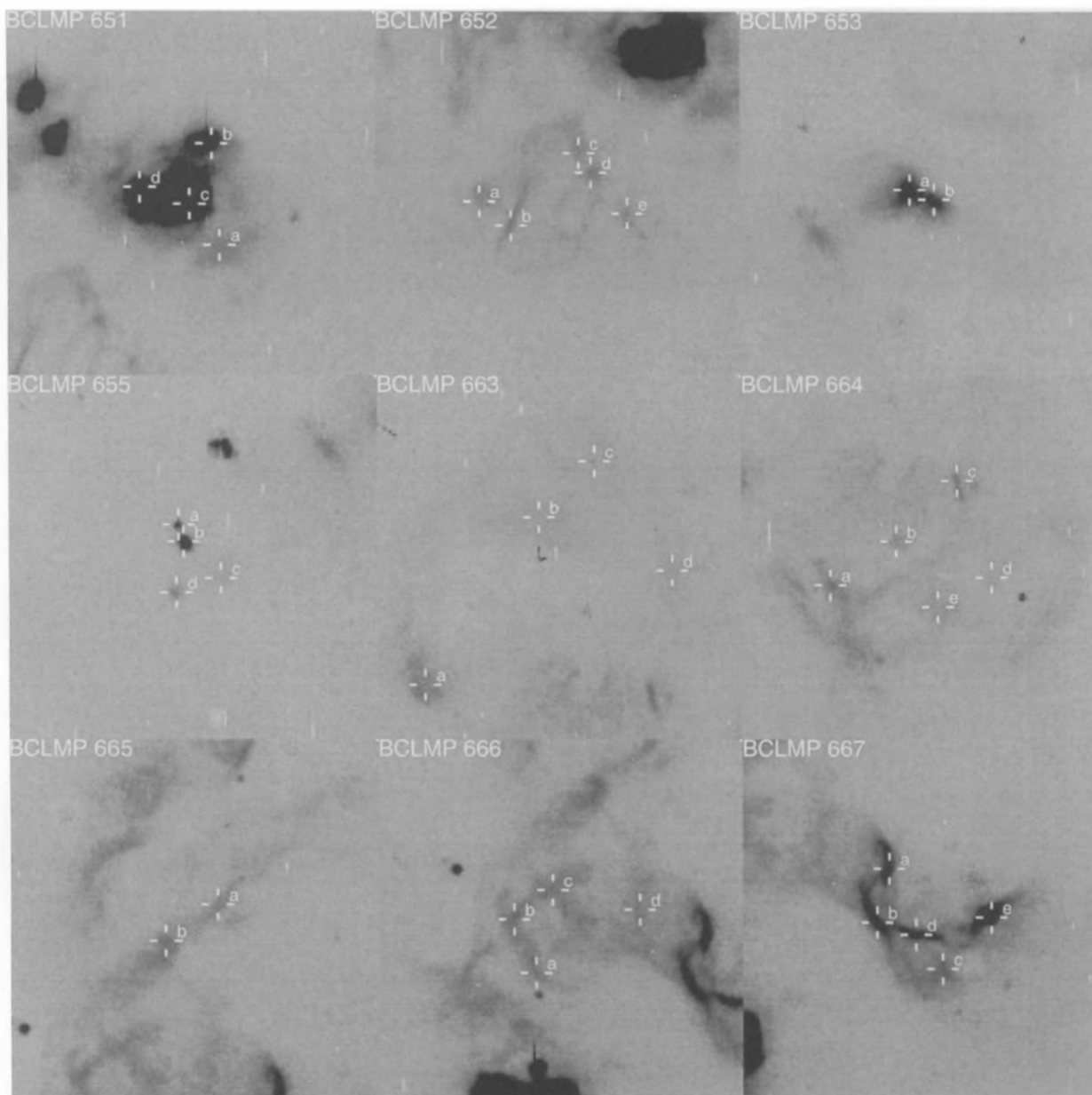
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Chart 67



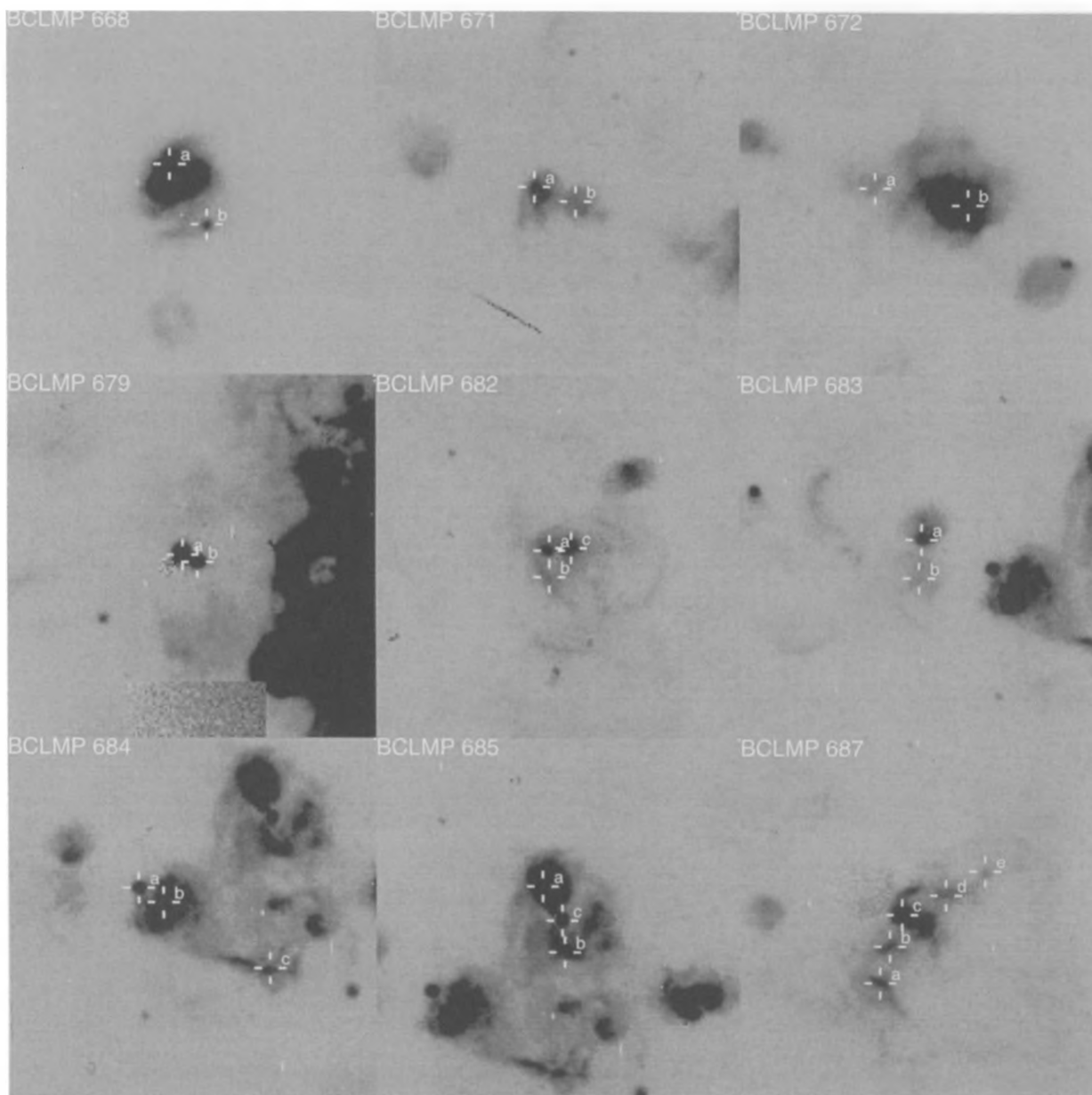
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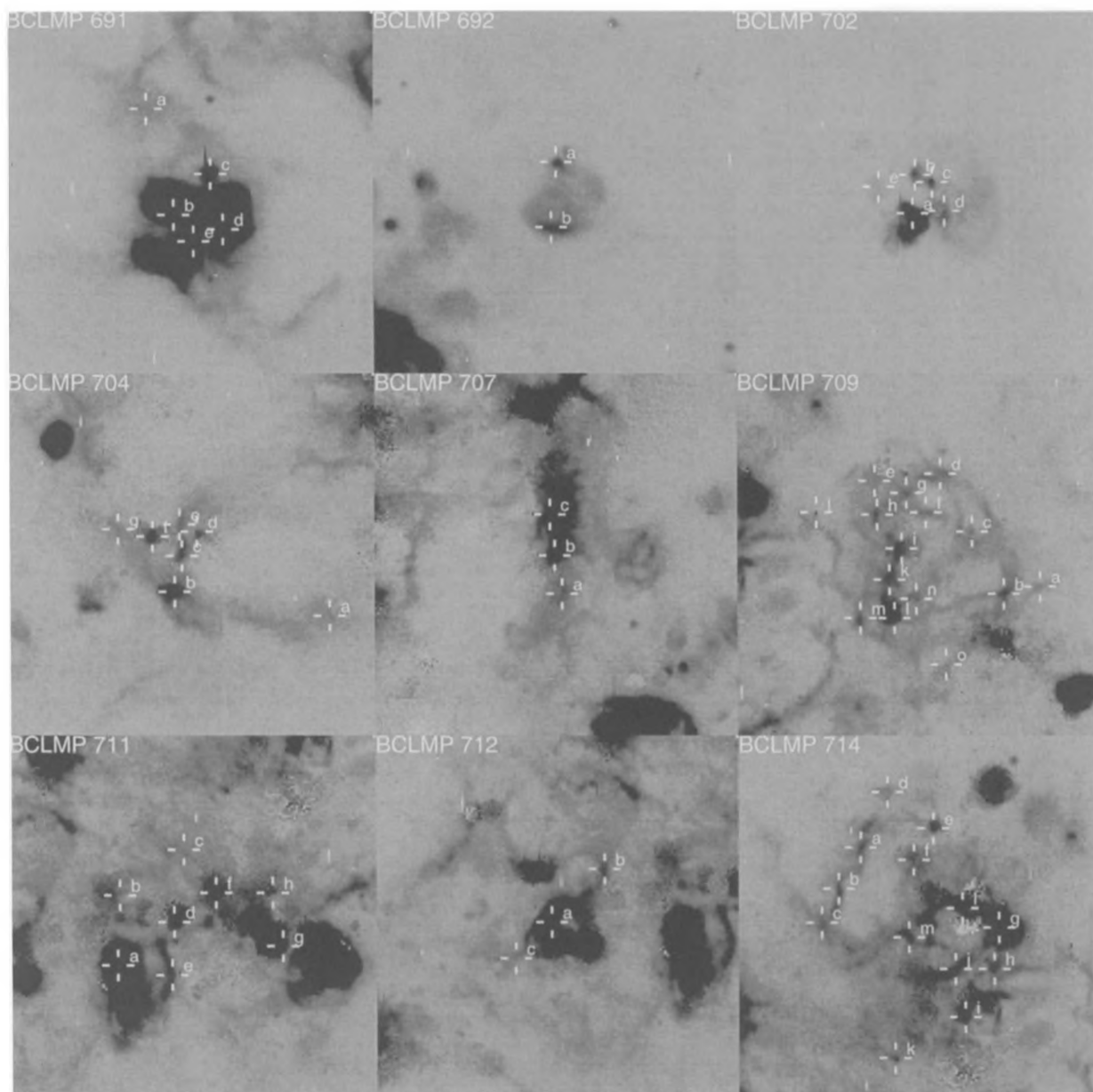
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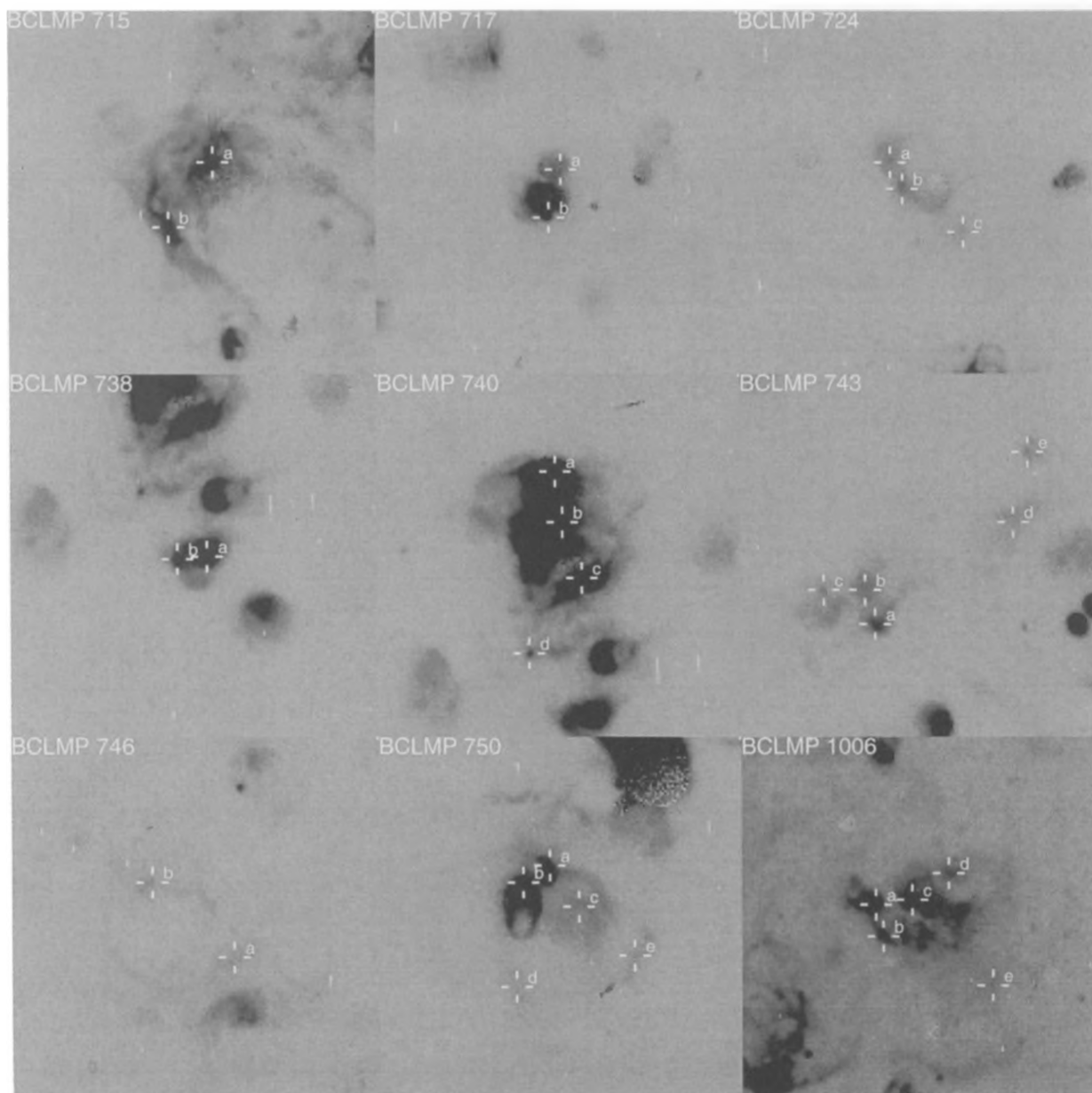
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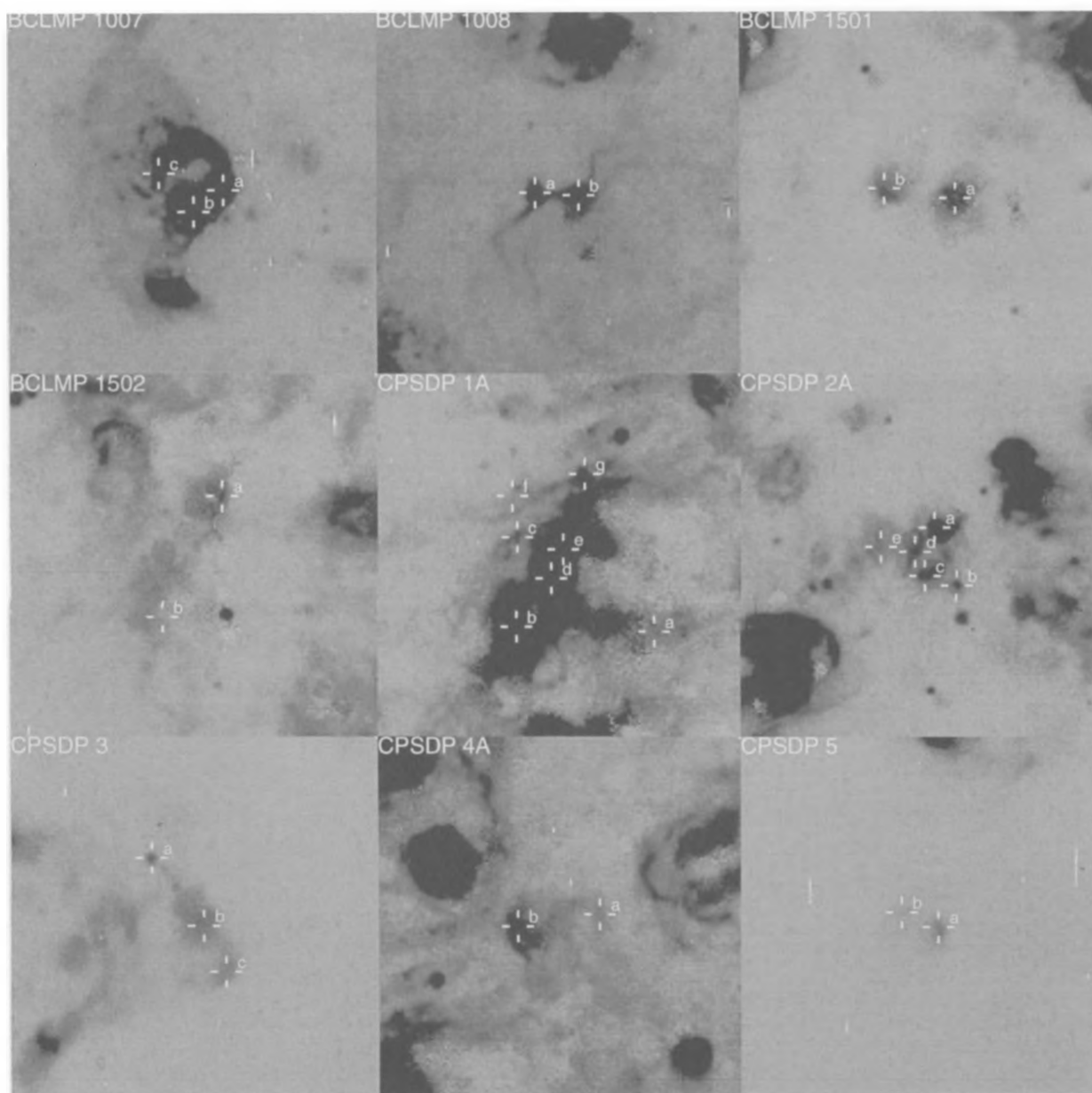
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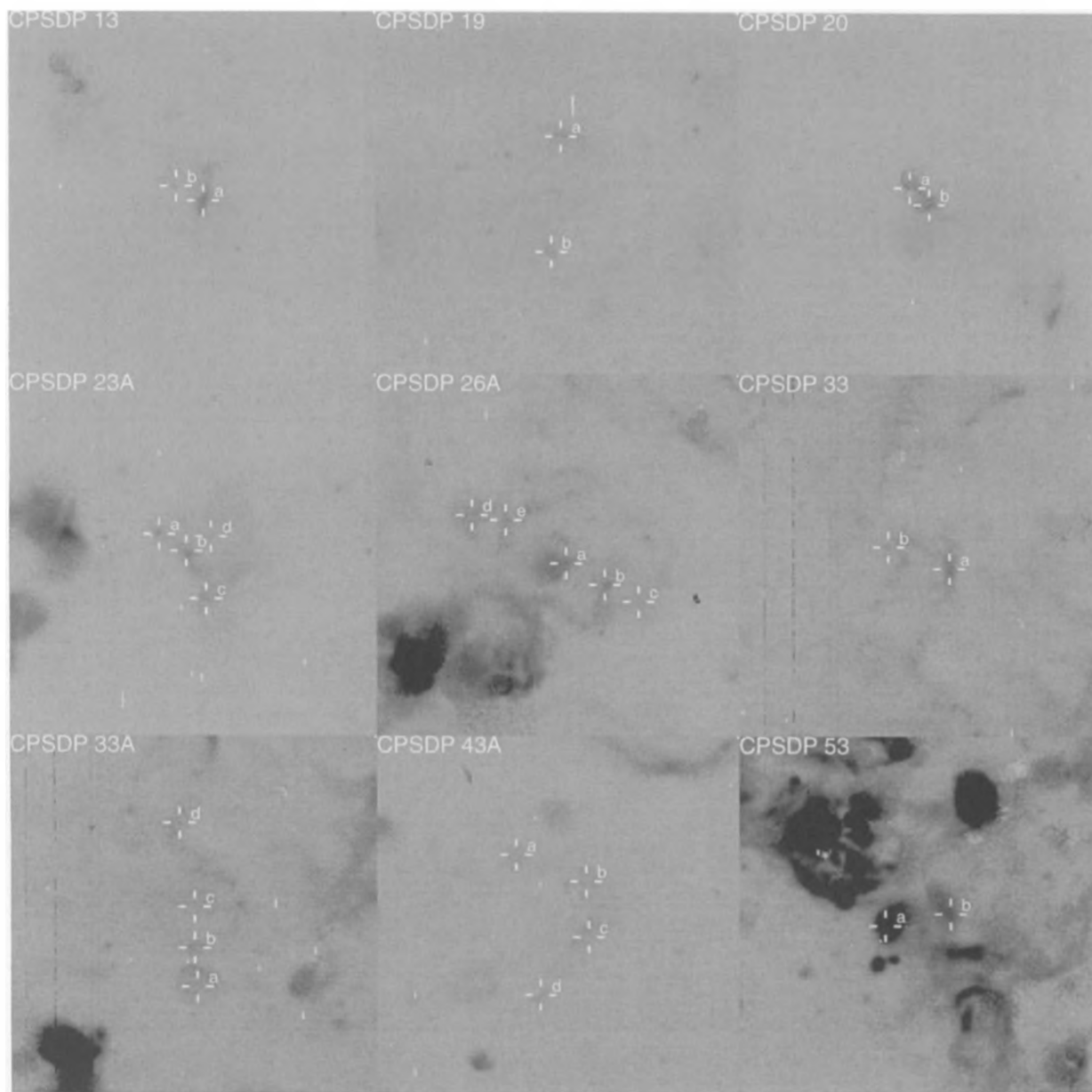
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Chart 72



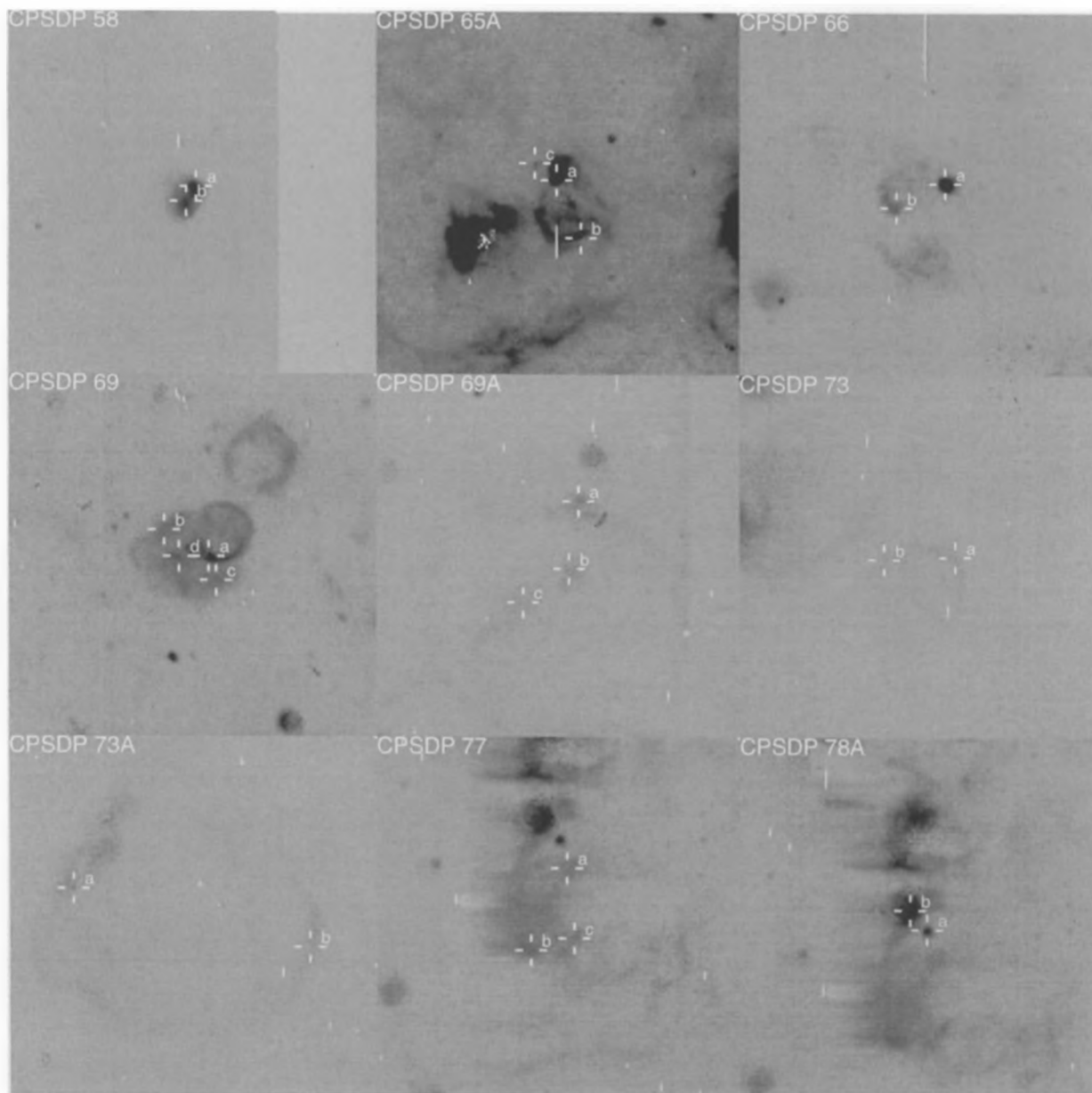
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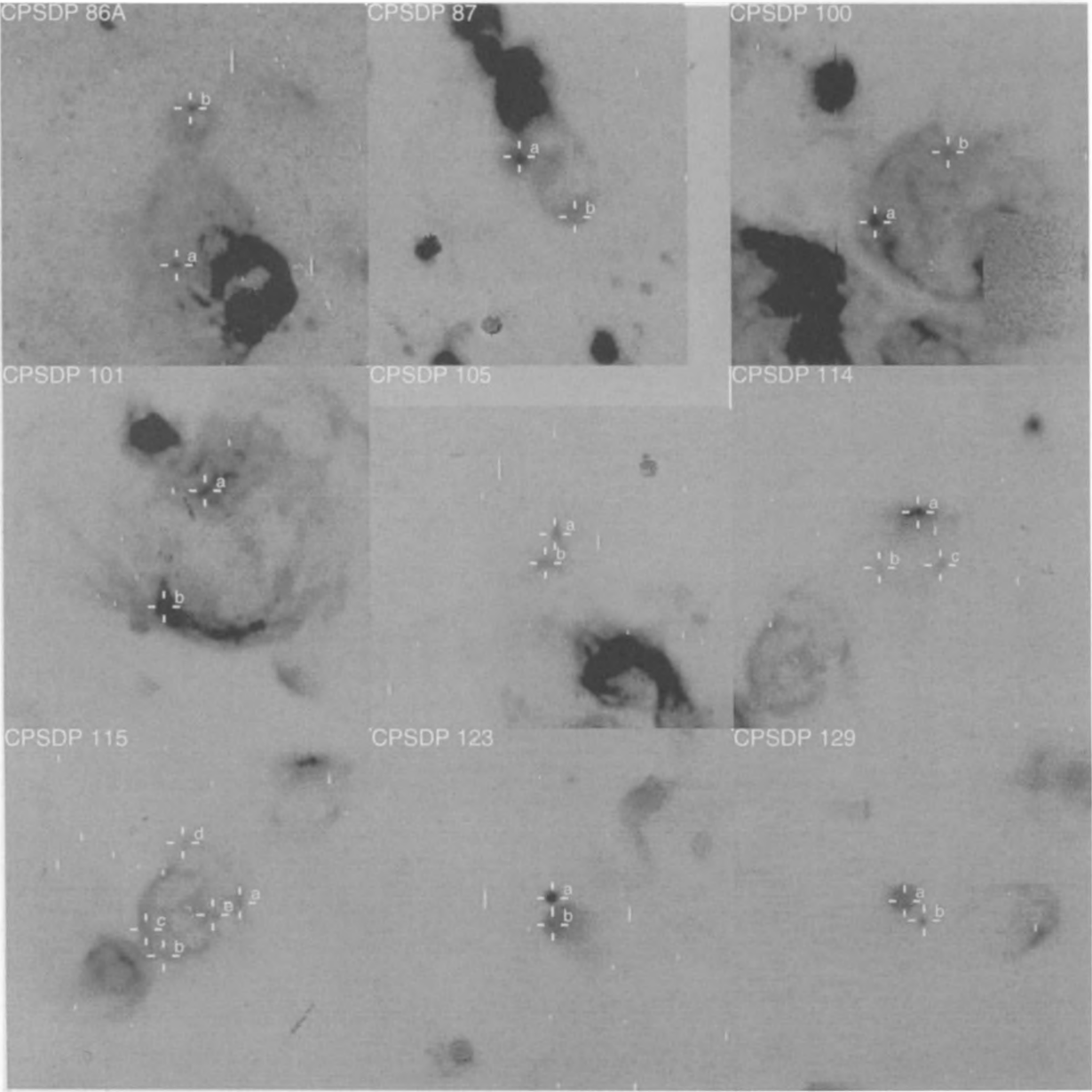
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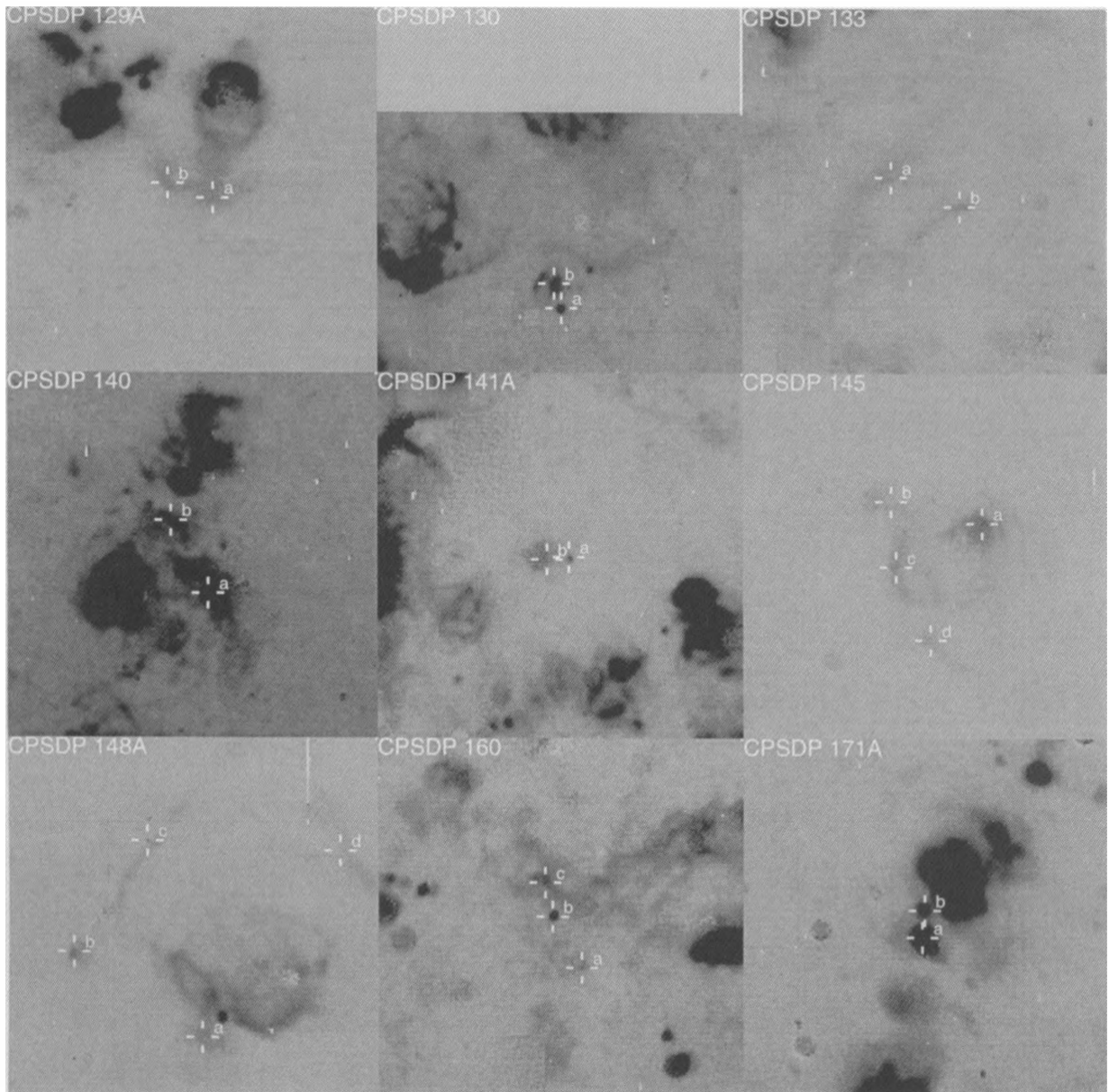
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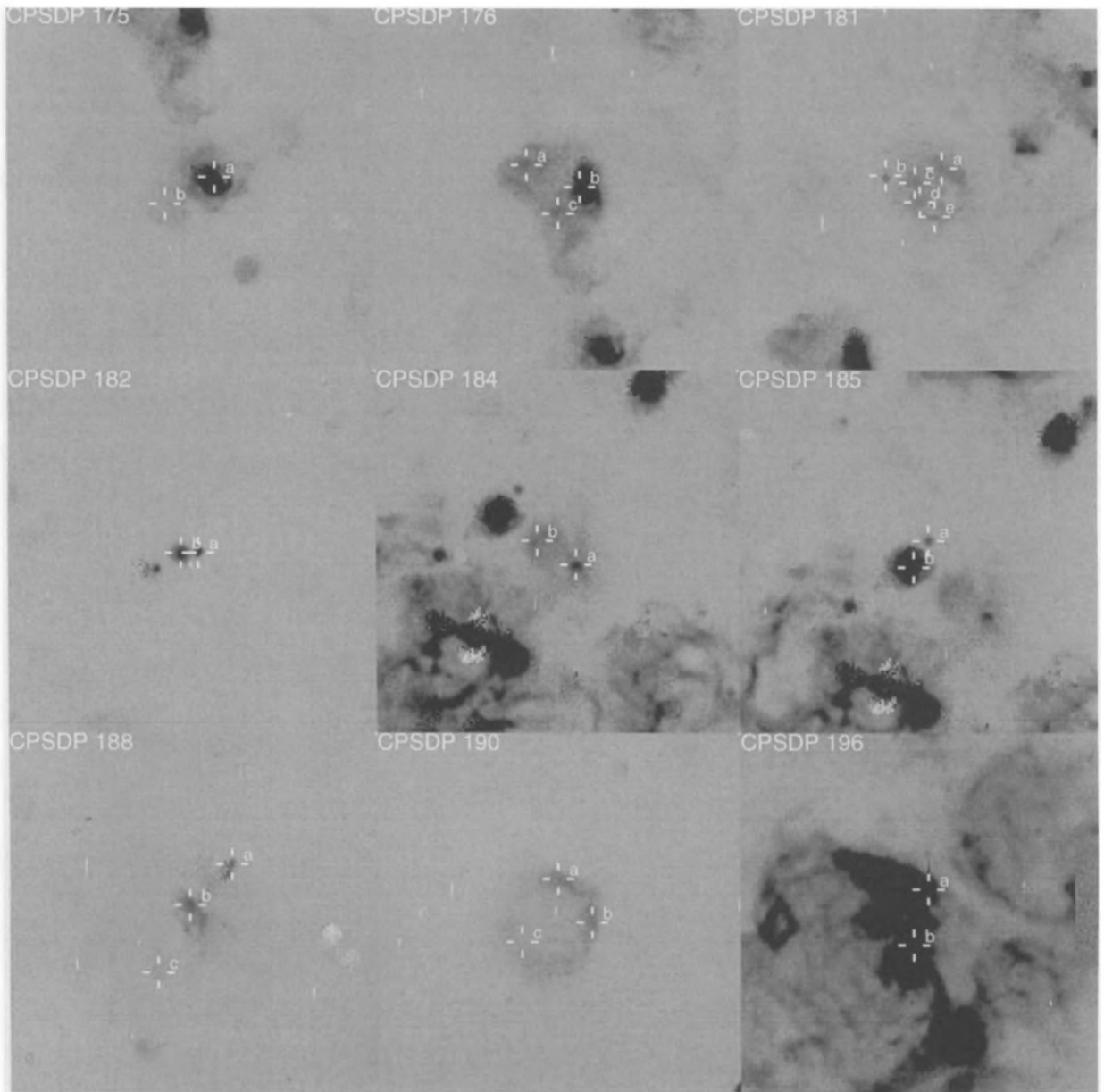
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Chart 76



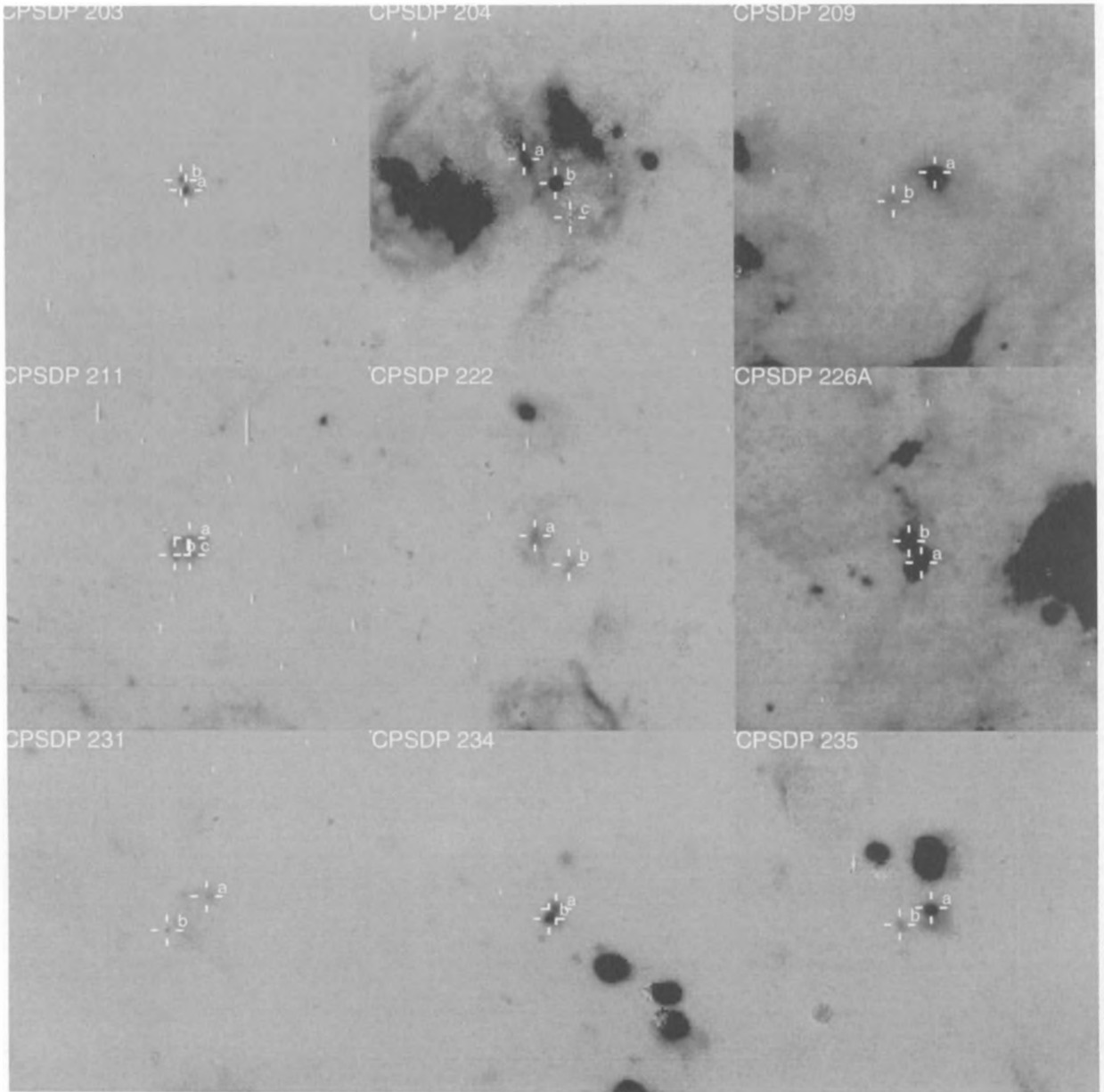
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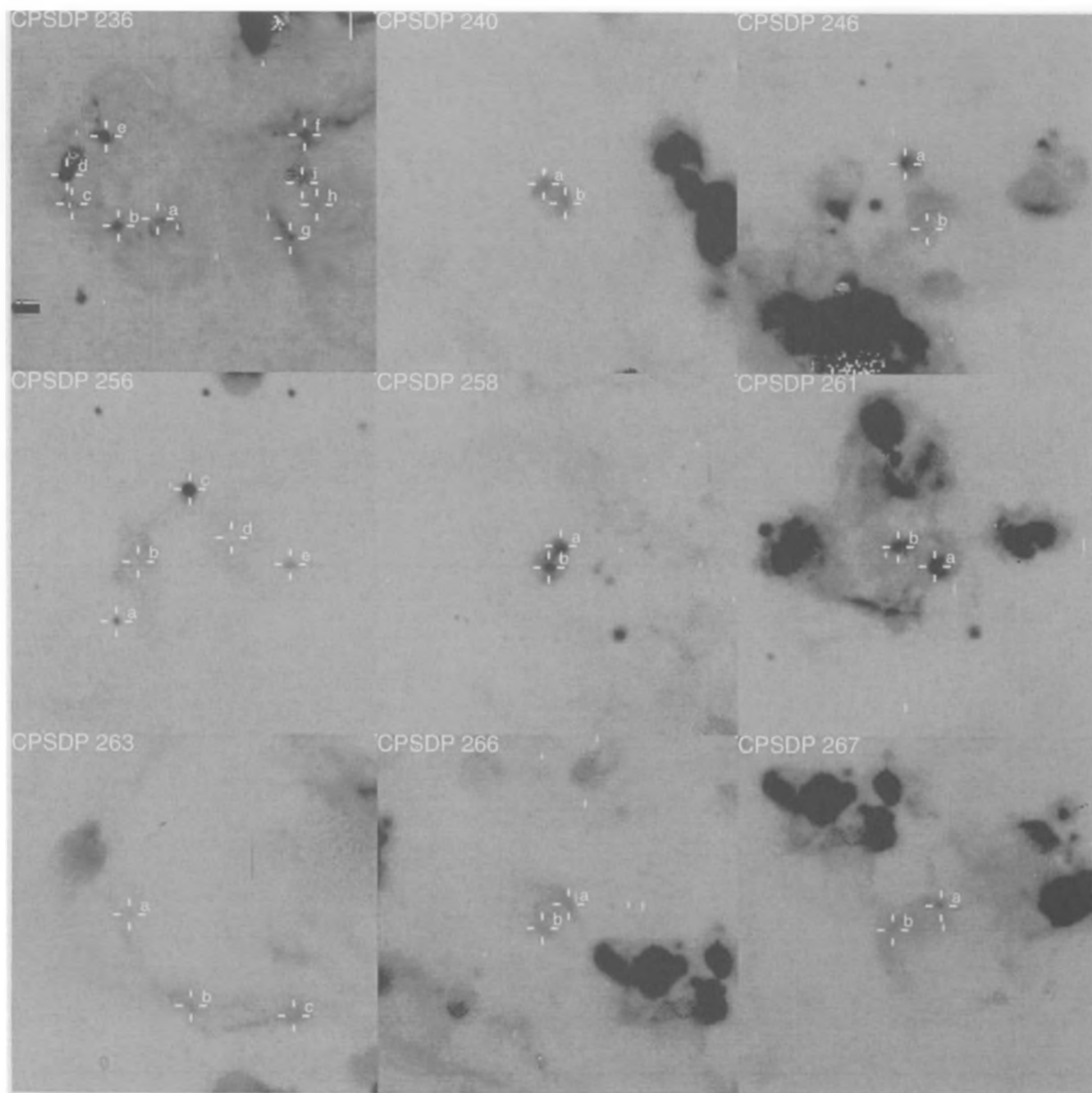
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Chart 78



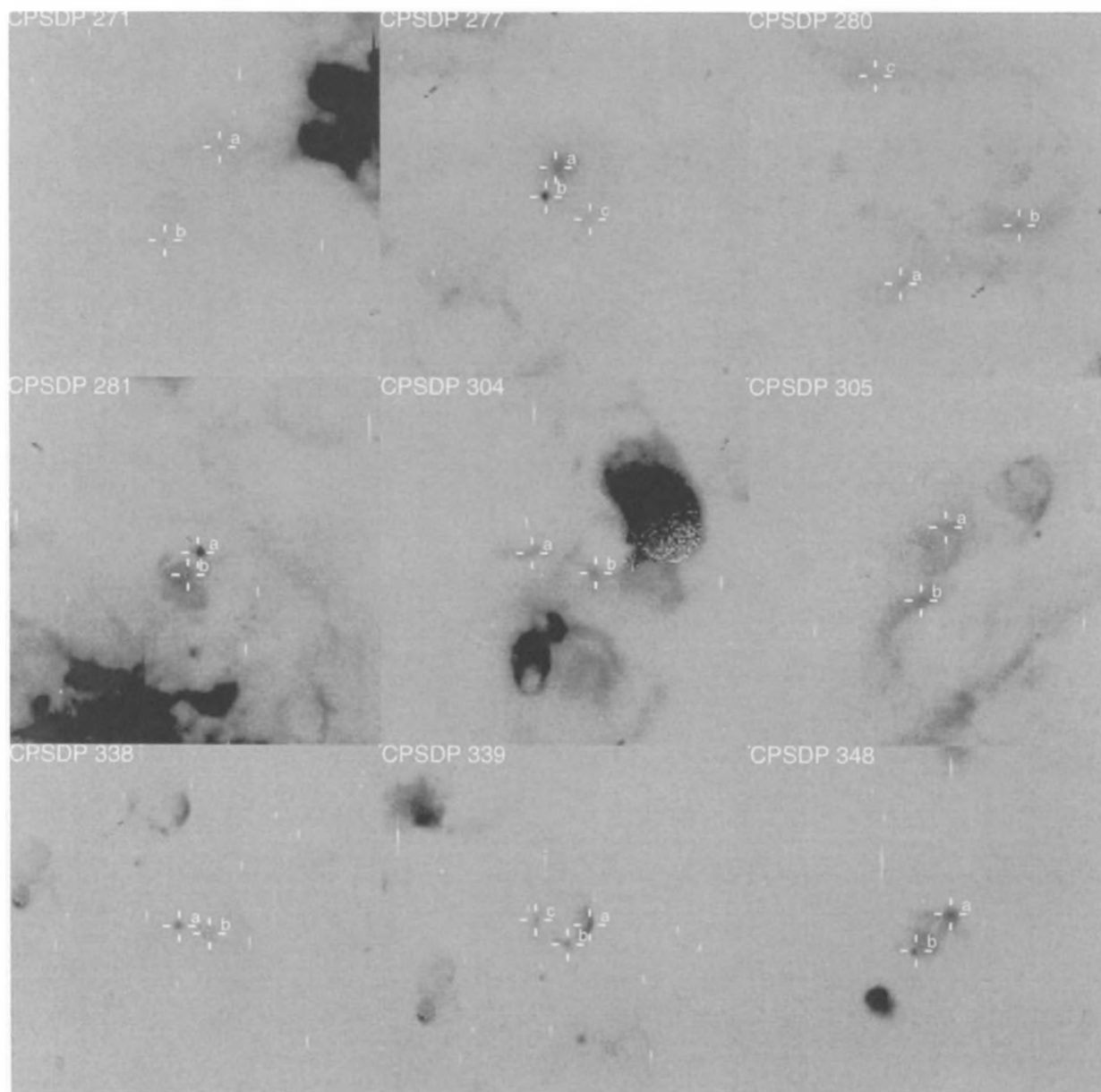
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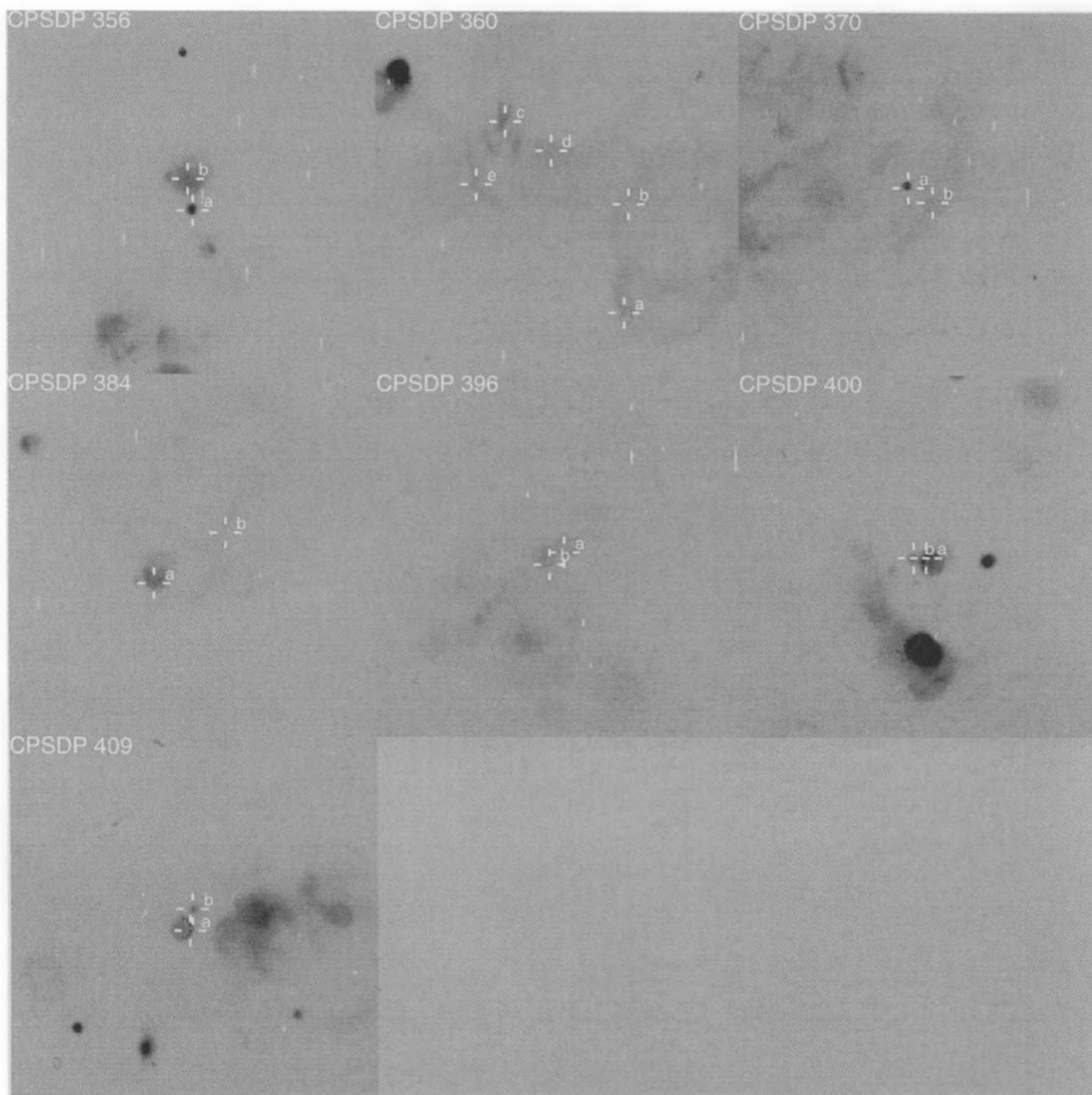
M33
Chart 80



M33
Chart 81

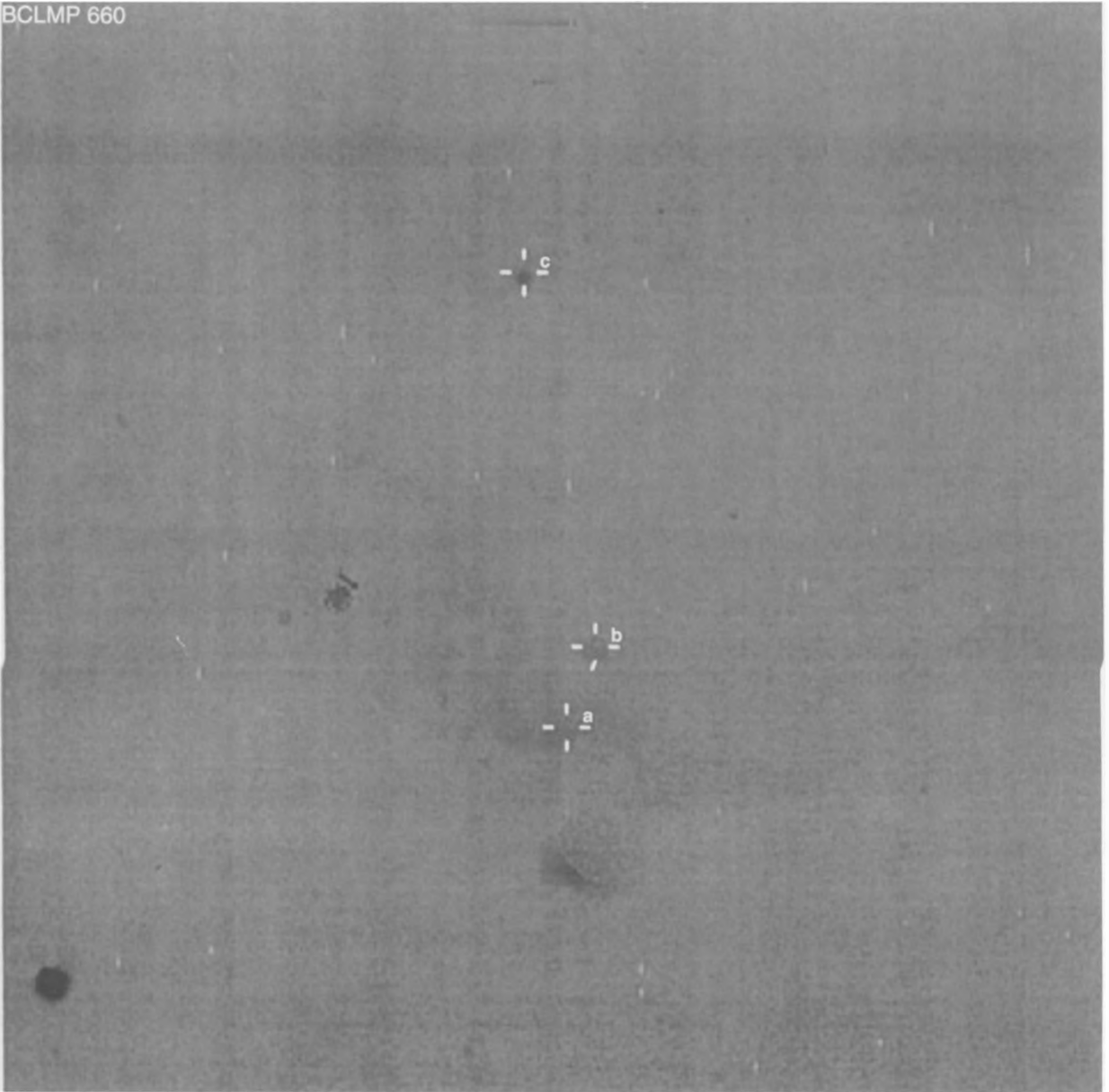


M33
Chart 82



M33
Chart 83

BCLMP 660



M33**References**

1. Boulesteix, J., Courtès, G., Laval, A., Monnet, G., & Petit, H. 1974, "An Optical Study of M33:I. Morphology of the Gas", A&A, 37, 33.
2. Christian, C.A., & Schommer, R.A. 1982, "The Cluster System of M33", ApJS, 49, 405.
3. Courtès, G., Petit, H., Sivan J.-P., Dodonov, S., & Petit, M. 1987, "H α Survey of M33 with the Six-meter Telescope: Morphology of the General Diffuse Emission, Evidence for a Chaotic Medium of Bubbles and Filaments", A&A, 174, 28.
4. D'Odorico, S., Dopita, M.A., & Bienvenuti, P. 1980, "A Catalogue of Supernova Remnant Candidates in Nearby Galaxies", A&AS, 40, 67.
5. Gordon, S.M., Kirshner, R.P., Long, K.S., Blair, W.P., Duric, N., & Smith, R.C. 1998, "A New Optical Sample of Supernova Remnants in M33", ApJS, 117, 89.
6. Hodge, P.W., Balsley, J., Wyder, T.K., & Skelton, B.P. 1999, "A Photometric Catalog of 1272 Emission Regions in M33", PASP, 111, 685.
7. Hubble, E. 1926, "A Spiral Nebula as a Stellar System Messier 33", ApJ, 63, 236
8. Hubble, E., & Sandage, A. 1953, "The Brightest Variable Stars in Extragalactic Nebulae. I. M31 and M33", ApJ, 118, 353.
9. Humphreys, R.M., & Sandage, A. 1980, "On the Stellar Content and Structure of the Spiral Galaxy M33", ApJS, 44, 319.
10. Kinman, T.D., Mould, J.R., & Wood, P.R. 1987, "Variable Stars in Local Group Galaxies. I. M33", AJ, 93, 833.
11. Melnick, J., & D'Odorico, S. 1978, "Star Clusters in M33. I. Identification", A&AS, 34, 249.
12. Sabbadin, F. 1979, "Supernova Remnants in M33", A&A, 80, 212.
13. Sandage, A., & Carlson, C. 1983, "The Distance to M33 Based on a New Study of its Cepheids", ApJ, 267, L25.
14. van den Bergh, S., Herbst, E., & Kowal, C.T. 1975, "A Survey of Bright Variable Stars in M33", ApJS, 29, 303.
15. Wyder, T.K., Hodge, P.W., & Skelton, B.P. 1997, "The Luminosity Function and Size Distribution of the H II Regions in M33", PASP, 109, 927.

PART II

THE ATLAS OF DWARF GALAXIES IN THE LOCAL GROUP

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And I

Alternate name(s): Andromeda I

Right Ascension (2000): 00h 45m 43s

Declination (2000): +38d 00.4m

Type: dE0

Apparent magnitude (V): 12.75

Color (B-V): 0.75

(U-B): 0.29

(V-R):

Color Excess, E(B-V): 0.04

Absolute magnitude (MV): -11.8

Distance (kpc): 805

Radial velocity (solar, km/sec):

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: none

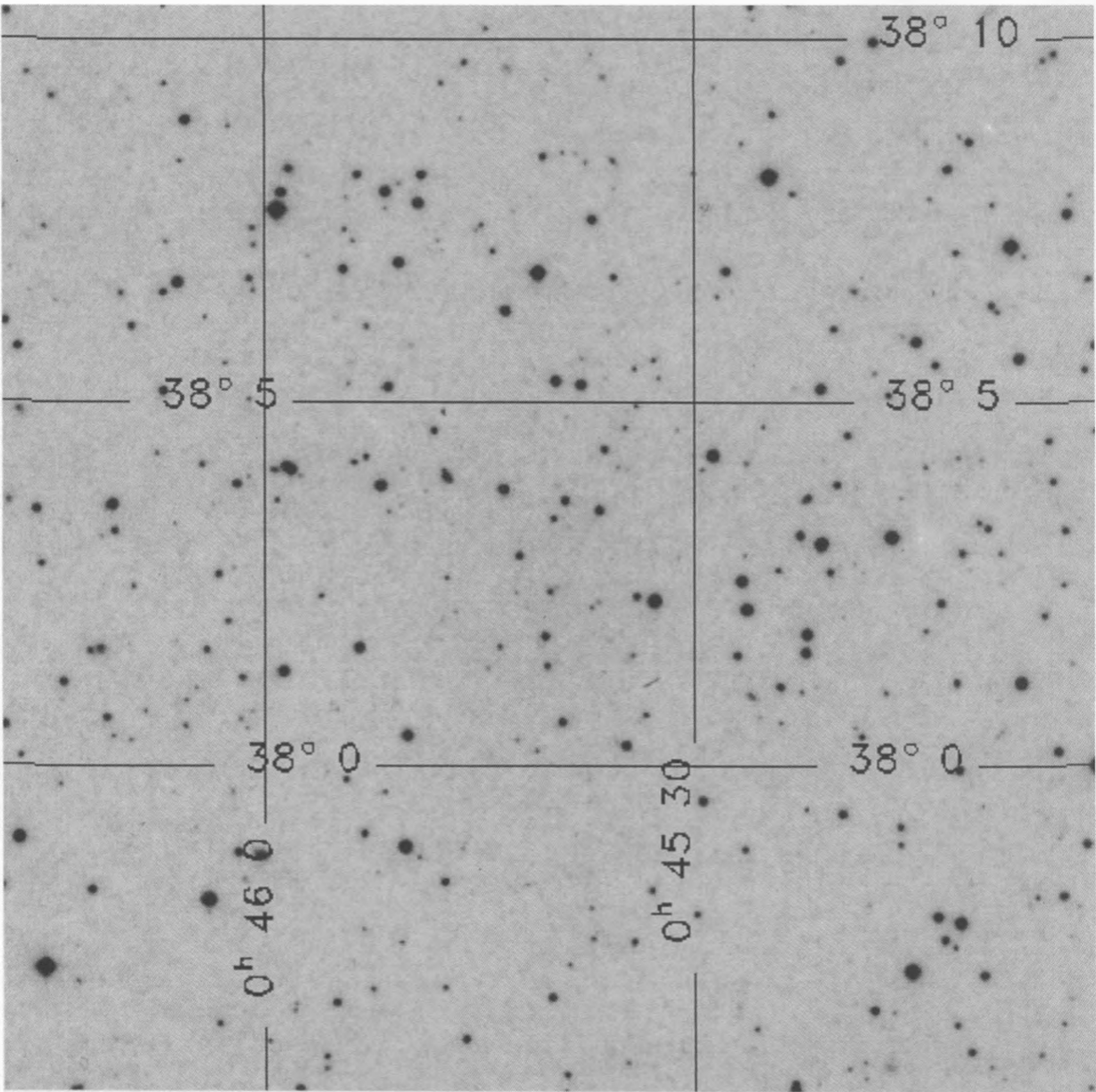
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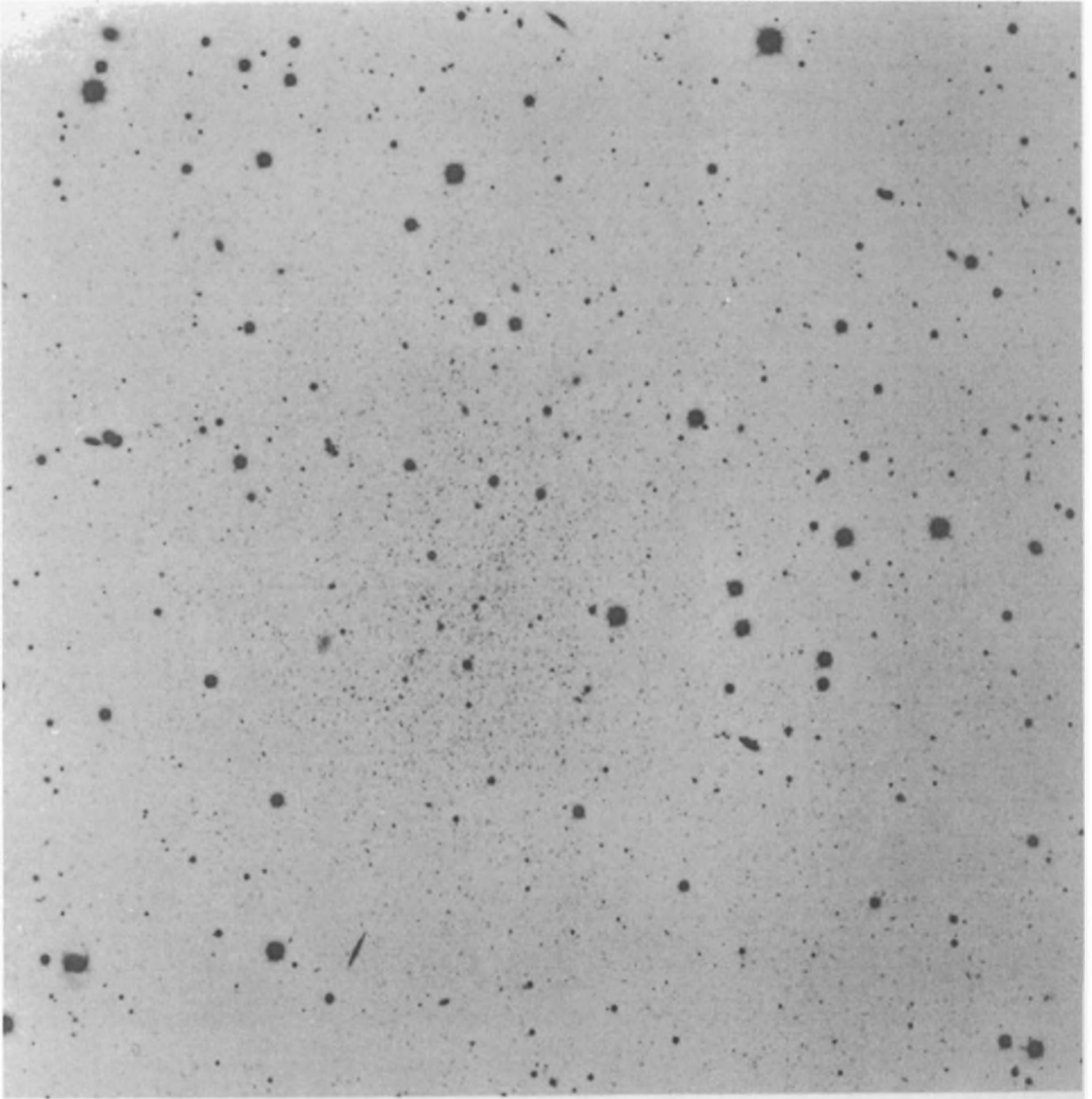
Dust clouds: none

Source:

Andromeda I

Chart 84



Andromeda I**Chart 85**

Andromeda I

References

1. Caldwell, N., Armandroff, T.E., Seitzer, P., & Da Costa, G.S. 1992, "The Dwarf Spheroidal Companions to M31: Surface Brightness Profiles", AJ, 103, 840.
2. Da Costa, G.S., Armandroff, T.E., Caldwell, N., & Seitzer, P. 1996, "The Dwarf Spheroidal Companions to M31: WFPC2 Observations of Andromeda I", AJ, 112, 2576.
3. Mould, J., & Kristian, J. 1990, "The Dwarf Spheroidal Galaxy Andromeda I", ApJ, 354, 438.
4. Thuan, T.X., & Martin, G.E. 1979, "A New Dwarf Galaxy in the Local Group", ApJ, 232, L11.
5. van den Bergh, S. 1972, "Search for Faint Companions to M31", ApJ, 171, L31.
6. van den Bergh, S. 1974, "The Dwarf Spheroidal Companions to the Andromeda Nebula", ApJ, 191, 271.

And II

Alternate name(s): Andromeda II

Right Ascension (2000): 01h 16m 11s

Declination (2000): +33d 21.7m

Type: dE3

Apparent magnitude (V): 12.7

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V): 0.08

Absolute magnitude (M_V): -11.1

Distance (kpc): 525

Radial velocity (solar, km/sec):

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: none

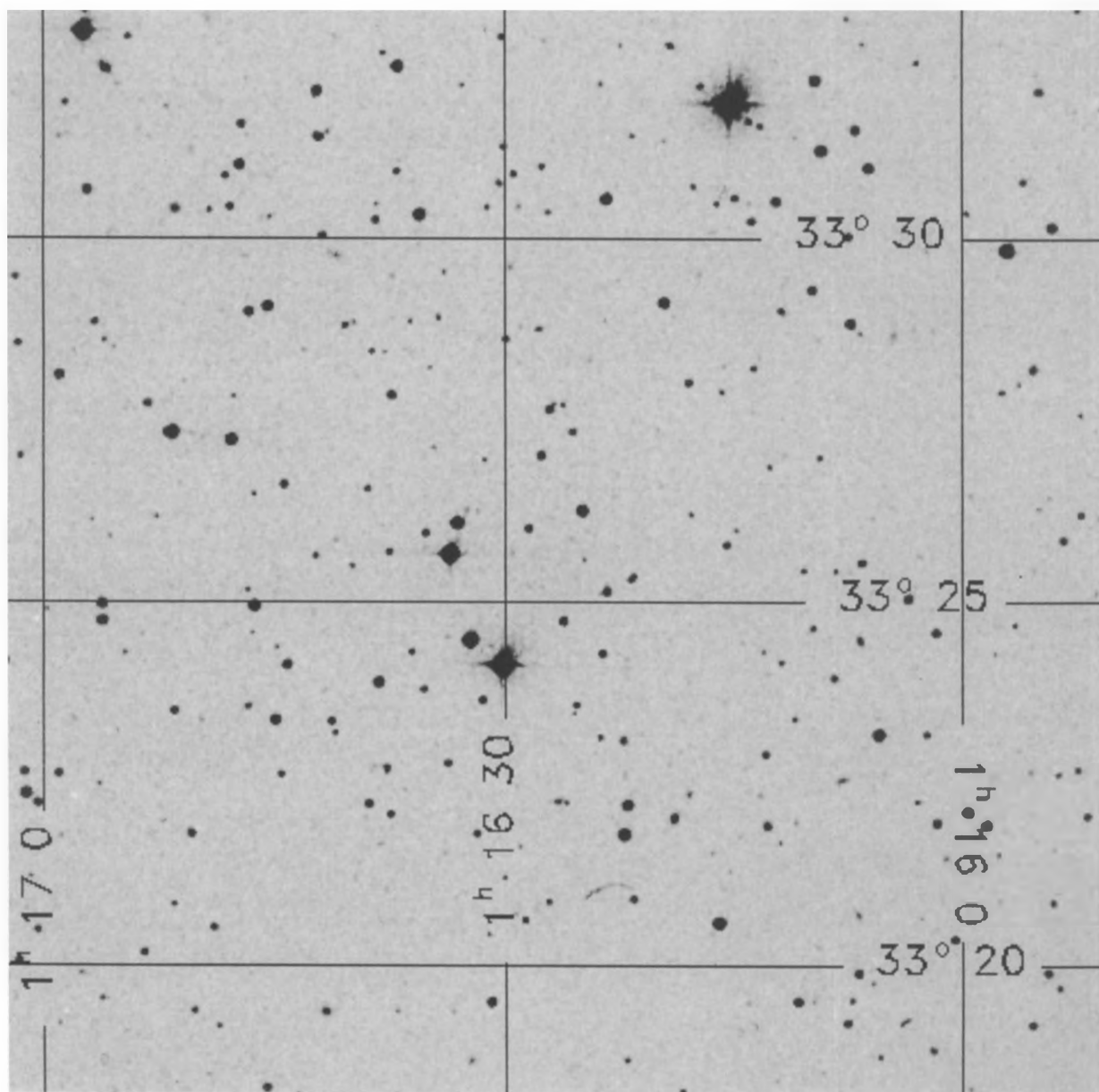
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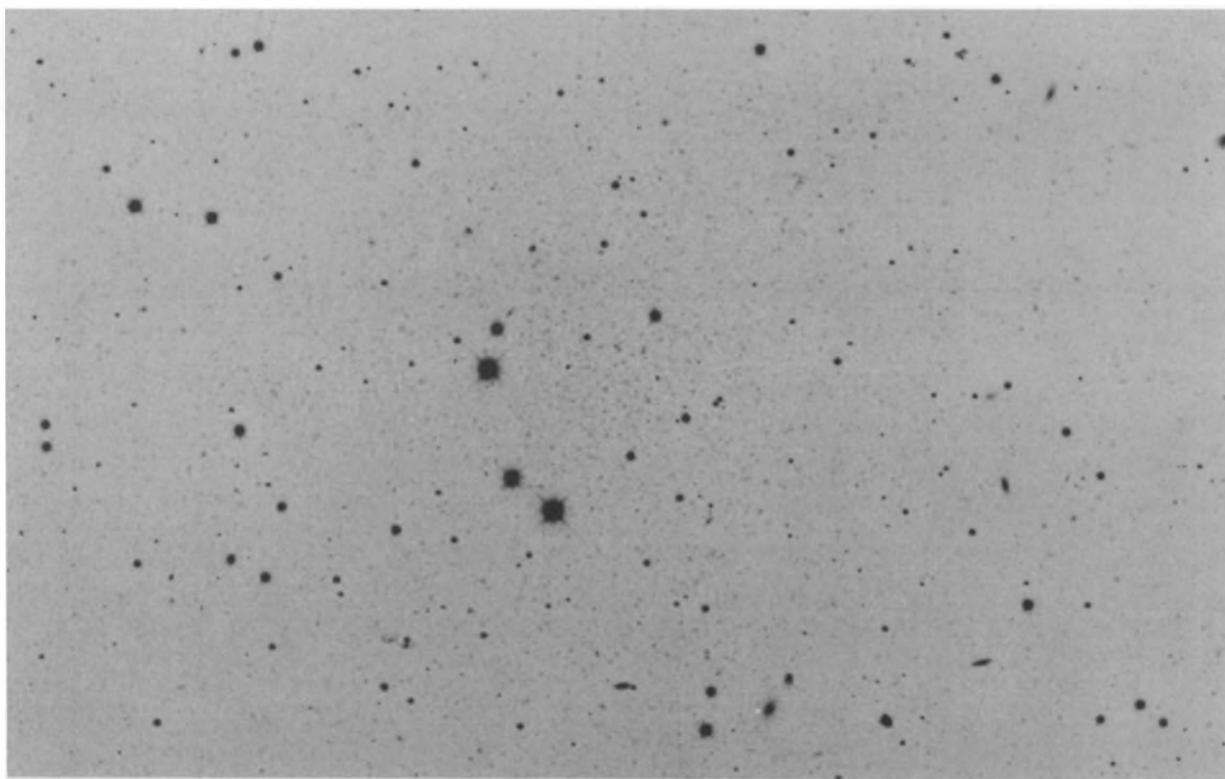
Dust clouds: none

Source:

Andromeda II

Chart 86



Andromeda II**Chart 87**

Andromeda II

References

1. Aaronson, M., Gordon, G., Mould, J., Olszewski, E., & Suntzeff, N. 1985, "The Extended Branch of the Andromeda II Dwarf Spheroidal Galaxy", *ApJ*, 296, L7.
2. Caldwell, N., Armandroff, T.E., Seitzer, P., & Da Costa, G.S. 1992, "The Dwarf Spheroidal Companions to M31: Surface Brightness Profiles", *AJ*, 103, 840.
3. König, C.H.B., Nemec, J.M., Mould, J.R., & Fahlman, G.G. 1993, "Color-Magnitude Diagram for the Andromeda II Dwarf Galaxy", *AJ*, 106, 1819.
4. Mould, J., & Aaronson, M. 1986, "The Formation and Evolution of Carbon Stars", *ApJ*, 303, 10.
5. van den Bergh, S. 1972, "Search for Faint Companions to M31", *ApJ*, 171, L31.
6. van den Bergh, S. 1974, "The Dwarf Spheroidal Companions to the Andromeda Nebula", *ApJ*, 191, 271.

And III

Alternate name(s): Andromeda III

Right Ascension (2000): 00h 35m 17s

Declination (2000): +36d 30.5m

Type: dE6

Apparent magnitude (V): 14.21

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V): 0.05

Absolute magnitude (M_V): -10.2

Distance (kpc): 760

Radial velocity (solar, km/sec):

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: none

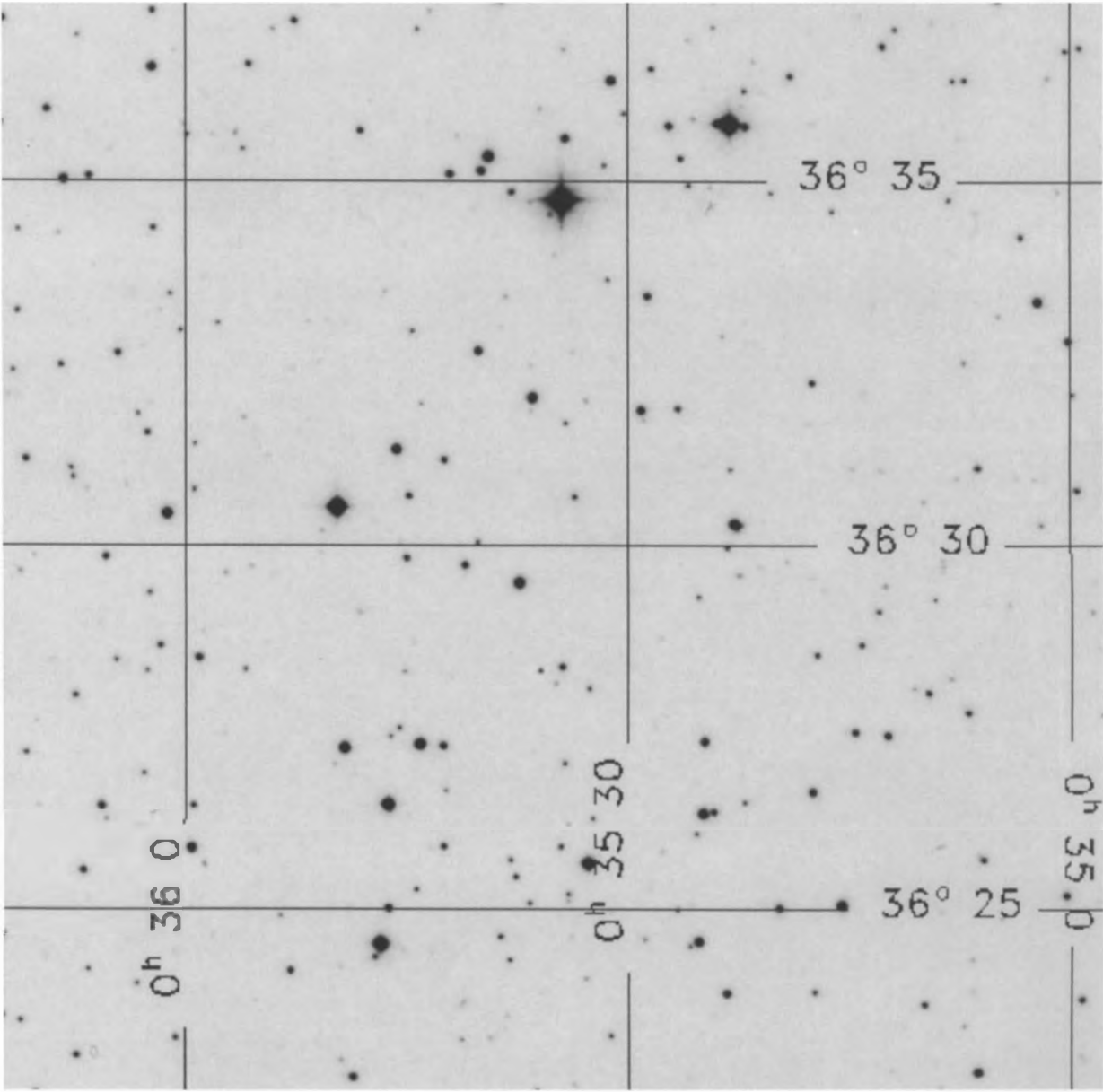
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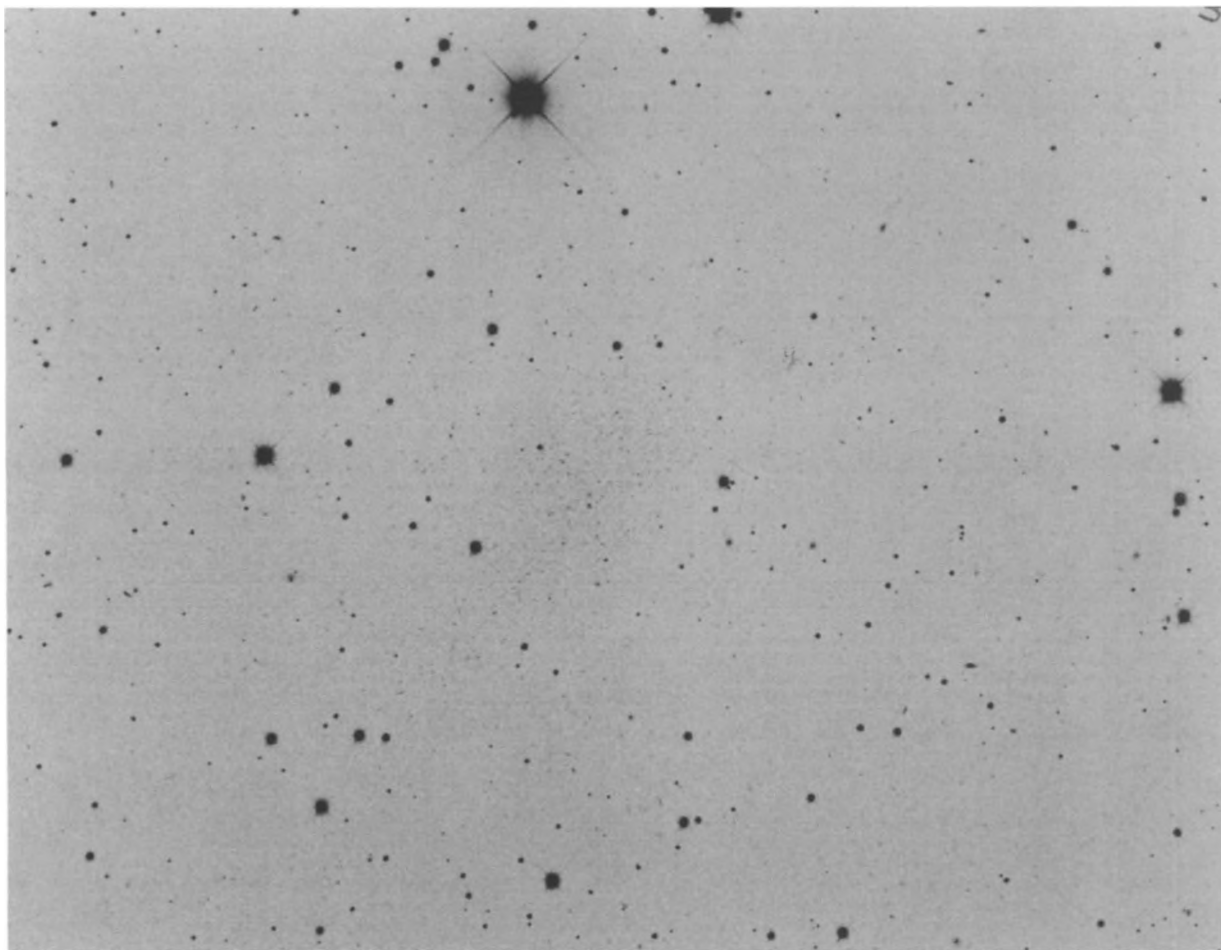
Dust clouds: none

Source:

Andromeda III

Chart 88



Andromeda III**Chart 89**

Andromeda III

References

1. Armandroff, T.E., Da Costa, G.S., Caldwell, N., & Seitzer, P. 1993, "The Dwarf Spheroidal Companions to M31: A Color-Magnitude Diagram for And III", *AJ*, 106, 986.
2. Caldwell, N., Armandroff, T.E., Seitzer, P., & Da Costa, G.S. 1992, "The Dwarf Spheroidal Companions to M31: Surface Brightness Profiles", *AJ*, 103, 840.
3. Thuan, T.X., & Martin, G.E. 1979, "A New Dwarf Galaxy in the Local Group", *ApJ*, 232, L11.
4. van den Bergh, S. 1972, "Search for Faint Companions to M31", *ApJ*, 171, L31.
5. van den Bergh, S. 1972, "Resolution of One of the Companions to M31", *ApJ*, 178, L99.
6. van den Bergh, S. 1974, "The Dwarf Spheroidal Companions to the Andromeda Nebula", *ApJ*, 191, 271.
7. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.

Antlia

Alternate name(s): AM 1001-270

Right Ascension (2000): 10h 04m 04s

Declination (2000): -27d 19.8m

Type: dE/Irr

Apparent magnitude (V): 14.8

Color (B-V):

(U-B):

(V-R): 0.05

Color Excess, E(B-V): 0.05

Absolute magnitude (M_V): -10.7

Distance (kpc): 1235

Radial velocity (solar, km/sec): 361

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: none

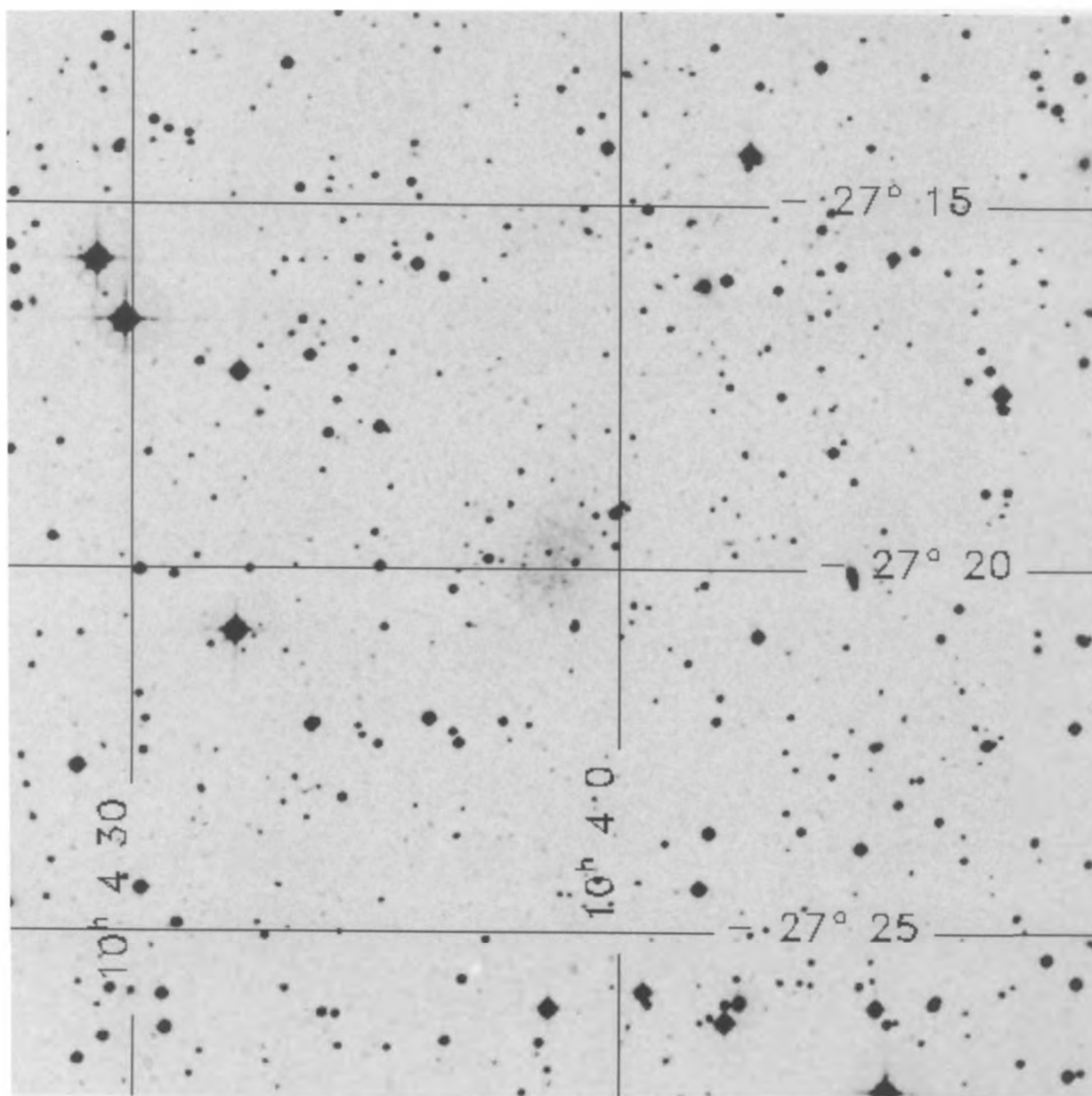
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Dust clouds: none

Source:

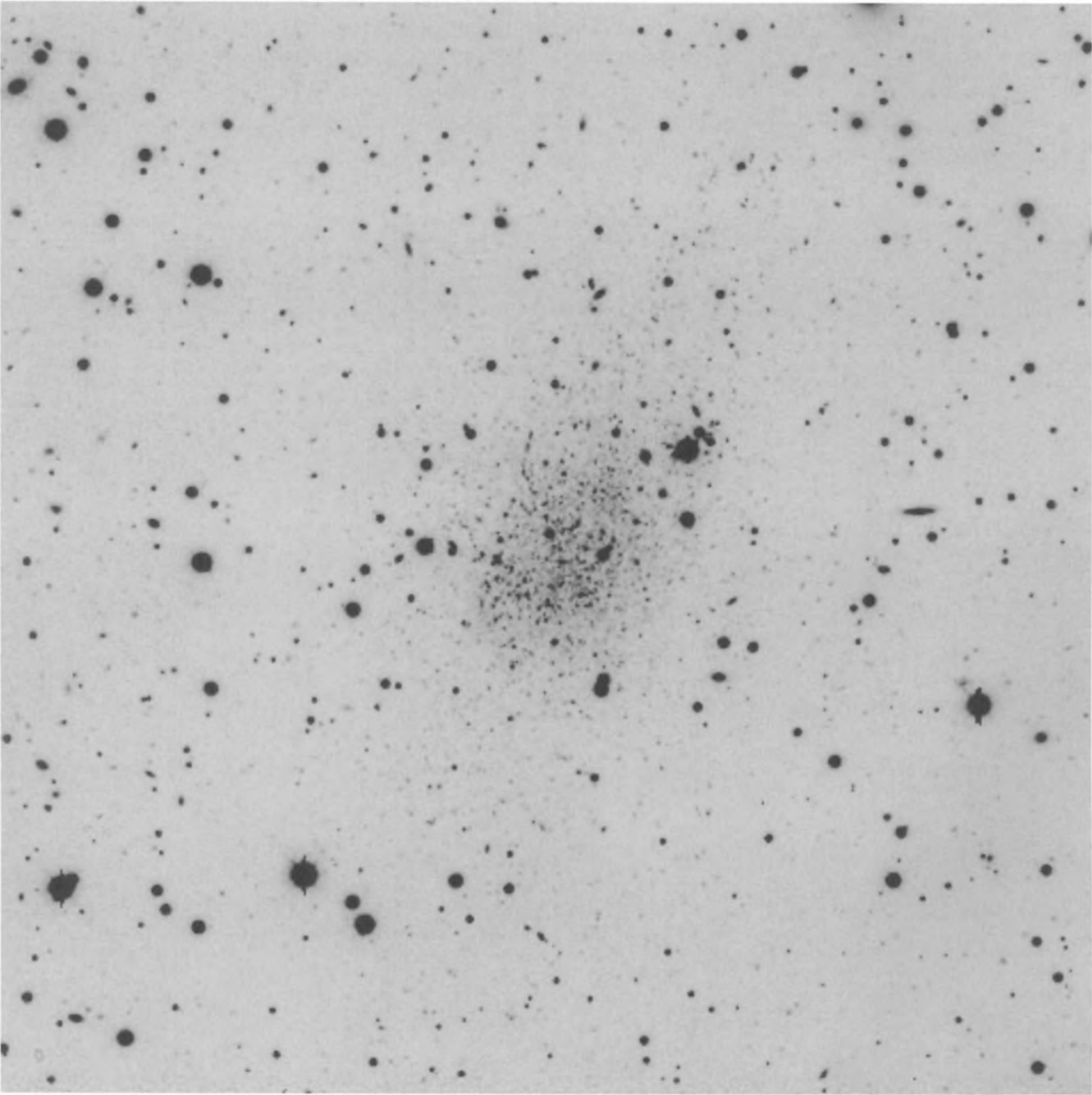
Antlia

Chart 90



Antlia

Chart 91



Antlia

References

1. Aparicio, A., Dalcanton, J.J., Gallart, C., Martinez-Delgado, D. 1997, "The Nature of the Antlia Galaxy: A New Dwarf Irregular in the Outskirts of the Local Group", *AJ*, 114, 1447.
2. Sarajedini, A., Claver, C.V., & Ostheimer, J.C., Jr. 1997, "The Properties of the Antlia Dwarf Galaxy", *AJ*, 114, 2505.
3. Whiting, A.B., Irwin, M.G., & Hau, G.K.T. 1997, "A New Galaxy in the Local Group: The Antlia Dwarf Galaxy", *AJ*, 114, 996.

Carina

Alternate name(s): AM 0640-505

Right Ascension (2000): 06h 41m 37s

Declination (2000): -50d 58.0m

Type: dE4

Apparent magnitude (V): 10.85

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V): 0.04

Absolute magnitude (M_V): -9.2

Distance (kpc): 101

Radial velocity (solar, km/sec): 223

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: 11; designation: C

Source: [(2), [(3)]

HII regions: none

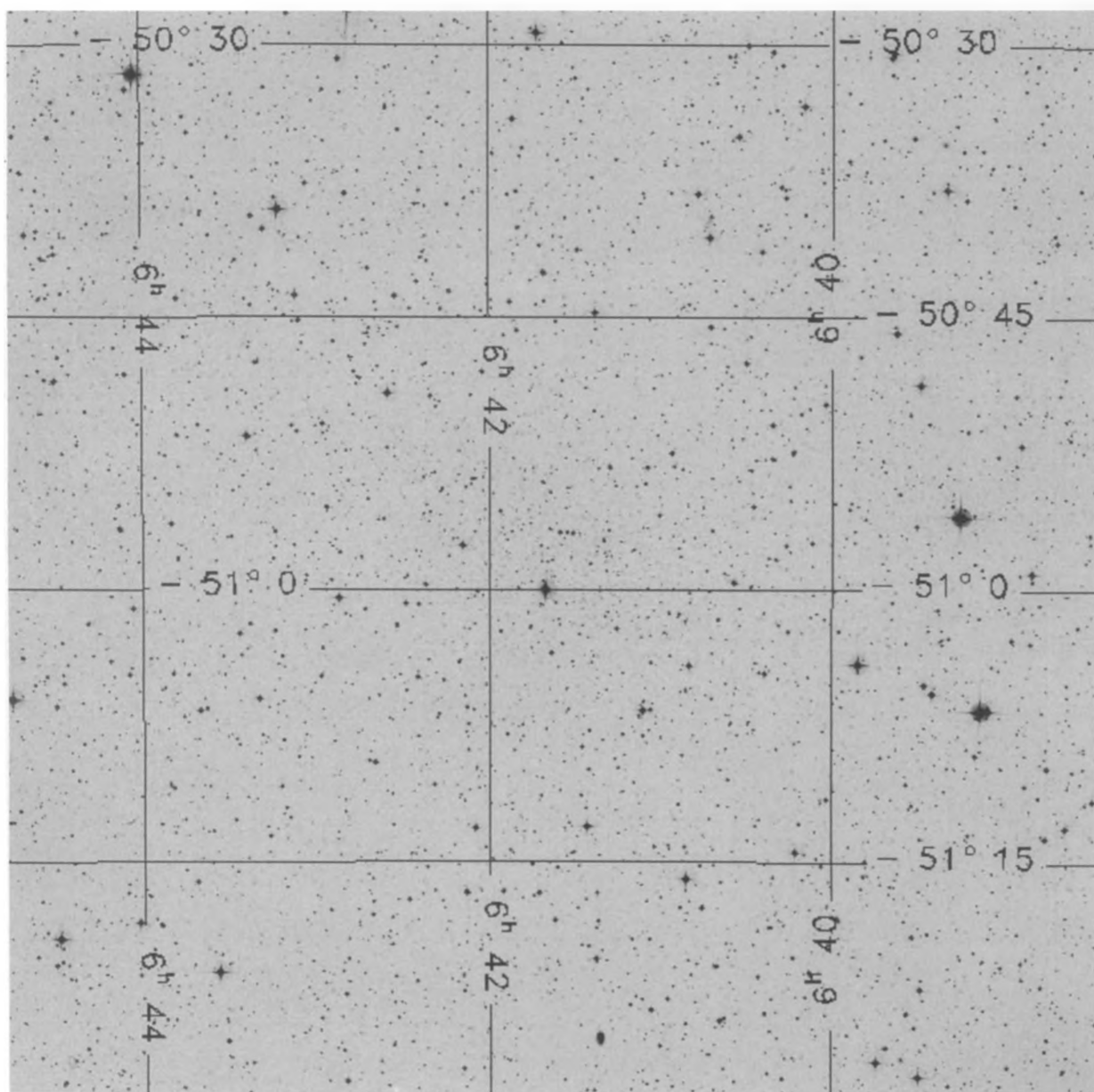
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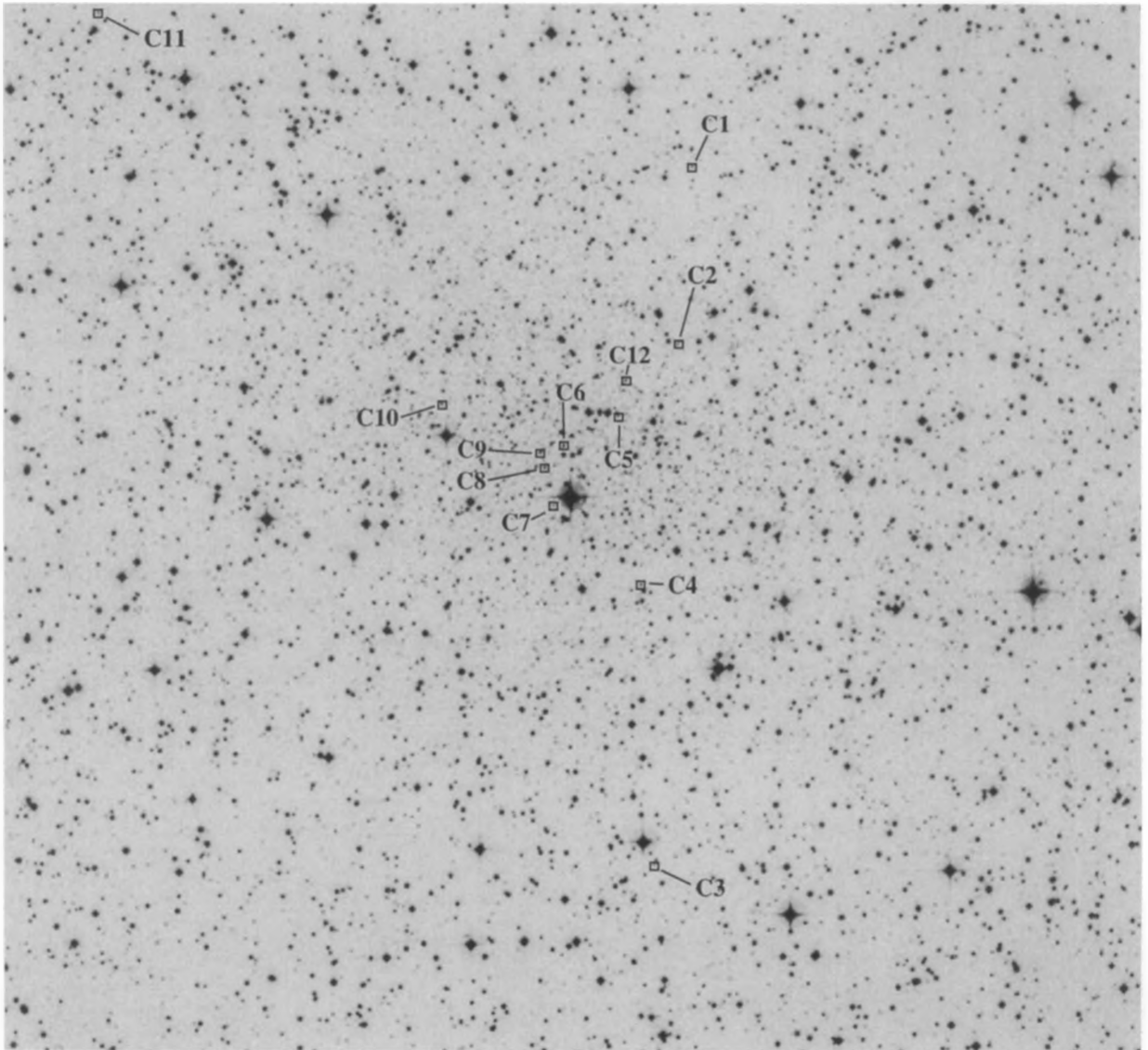
Planetary nebulae: none

Source:

Dust clouds: none

Source:

Carina**Chart 92**

Carina**Chart 93**

Carina

References

1. Armandroff, T.E., & Da Costa, G.S. 1991, "Metallicities for Old Stellar Systems from Ca II Triplet Strengths in Member Giants", *AJ*, 101, 1329.
2. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1985, "New Carbon Stars in Spheroidal Galaxies. I. Sculptor, Carina, Leo I and Leo II Systems", *A&A*, 144, 388.
3. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1985, "New Carbon Stars in Spheroidal Galaxies, II. Draco, Ursa Minor, and New Data on Sculptor, Carina, and Leo I", *A&A*, 161, 232.
4. Bono, G., Caputo, F., Santolamazza, P., Cassisi, S., & Piersimoni, A. 1997, "Evolutionary Scenario for Metal-Poor Pulsating Stars. II. Anomalous Cepheids", *AJ*, 113, 2209.
5. Cannon, R.D., Hawarden, T.G., & Tritton, S.B. 1977, "A New Sculptor-type Dwarf Elliptical Galaxy in Carina", *MNRAS*, 180, 81P
6. Cannon, R.D., Niss, B., & Nørgaard-Nielsen, H.U. 1980, "The Discovery of Two Carbon Stars in the Carina Dwarf Galaxy", *MNRAS*, 196, 1P
7. Cook, K., Schechter, P., & Aaronson, M. 1983, "Accurate Radial Velocities for Carbon Stars in the Carina Dwarf", *BAAS*, 15, 907.
8. Da Costa, G.S. 1994, "New results for Local Group Dwarf Galaxies", in *Dwarf Galaxies*, edited by G. Meylan and P. Prugniel (European Southern Observatory, Munich), p. 221.
9. Demers, S., Beland, S., & Kunkel, W.E. 1983, "The Structure of the Carina Dwarf Elliptical Galaxy", *PASP*, 95, 354.
10. Faber, S.M., & Lin, D.N.C. 1983, "Is there Non-Luminous Matter in Dwarf Spheroidal Galaxies?", *ApJ*, 266, L17.
11. Godwin, P.J. 1985, "Core and Tidal Radii of the Carina Dwarf Spheroidal Galaxy from UK Schmidt Telescope Plates", in *Dynamics of Star Clusters*, IAU Symposium No. 113, edited by J. Goodman and P. Hut (Reidel, Dordrecht), p. 77.
12. Godwin, P.J., & Lynden-Bell, D. 1987, "Evidence of a Small Velocity Dispersion for the Carina Dwarf Spheroidal?", *MNRAS*, 22, 7P
13. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
14. Kuhn, J.R., Smith, H.A., & Hawley, S.L. 1996, "Tidal Disruption and Tails from the Carina Dwarf Spheroidal Galaxy", *ApJ*, 469, 93.
15. Lariviere, P., & Noriega-Crespo, A. 1993, "Gas Dynamics in Dwarf-Spheroidal Galaxies: Explaining Carina's Star Formation History", *BAAS*, 25, 1451.
16. Light, R.M. 1987, "Measurement of Abundances and their Variations in Dwarf Spheroidal Galaxies", *BAAS*, 19, 1033.
17. Lynden-Bell, D., Cannon, R.D., & Godwin, P.J.. 1983, "Slippery Evidence on the Galaxy's Invisible Heavy Halo", *MNRAS*, 204, 87P
18. Mateo, M., Olszewski, E.W., Pryor, C., Welch, D.L., & Fischer, P. 1993, "The Carina Dwarf Spheroidal Galaxy: How Dark Is It?", *AJ*, 105, 510.
19. McNamara, D.H., 1995, "Period-Luminosity Relations of SX Phoenixis Stars", *AJ*, 109, 1751.
20. Mighell, K.J. 1990, "The Carina Dwarf Spheroidal – An Old Galaxy with a Large Intermediate-Age Population", *A&AS*, 82, 1.

21. Mighell, K.J. 1990, "The Stellar Luminosity Function for the Carina Dwarf Spheroidal Galaxy", *A&AS*, 82, 207.
22. Mighell, K.J. 1992, "The Star-formation History of the Carina Dwarf Spheroidal Galaxy", *Proc. Ast. Soc. Aust.*, 10, 83.
23. Mighell, K.J. 1997, "WFPC2 Observations of the Carina Dwarf Spheroidal Galaxy", *AJ*, 114, 1458.
24. Mighell, K.J., & Butcher, H.R. 1992, "Star Formation Histories of Galaxies from their Stellar Luminosity Functions", *A&A*, 255, 26.
25. Mould, J., & Aaronson, M. 1983, "The Carina Dwarf Spheroidal –An Intermediate Age Galaxy", *ApJ*, 273, 530.
26. Mould, J.R., Bothun, G.D., Hall, P.J., Staveley-Smith, L., & Wright, A.E. 1990, "An Upper Limit on the H I Content of the Carina Dwarf Spheroidal Galaxy", *ApJ*, 362, L55.
27. Mould, J.R., Cannon, R.D., Aaronson, M., & Frogel, J.A. 1982, "Carbon Stars in the Carina Dwarf Spheroidal Galaxy", *ApJ*, 254, 500.
28. Nemec, J., & Mateo, M. 1990, "Dwarf Cepheids in the Carina Dwarf Galaxy", in *Evolution of the Universe of Galaxies*, ASP Conf. Ser. 10, edited by R.C. Kron (Astronomical Society of the Pacific, San Francisco), p. 134.
29. Nemec, J.M., Nemec, A.F.L., & Lutz, T.E. 1994, "Period-Luminosity-Metallicity Relations, Pulsation Modes, Absolute Magnitudes and Distances for Population II Variable Stars", *AJ*, 108, 222.
30. Olszewski, E.W., Peterson, R.C., & Aaronson, M. 1986, "High Precision Radial Velocities for Faint Giants. Radial Velocities of Extreme Halo Systems and the Mass of the Galaxy", *ApJ*, 302, L45.
31. Saha, A., Monet, D.G., & Seitzer, P. 1986, "RR Lyrae Stars in the Carina Dwarf Galaxy", *AJ*, 92, 302.
32. Seitzer, P., Da Costa, G.S., Armandroff, T., Frogel, J., & Light, R. 1990, "The Mass of the Carina Dwarf Galaxy", *BAAS*, 22, 755.
33. Seitzer, P., & Frogel, J.A. 1985, "Radial Velocities of Carbon Stars in Three Dwarf Spheroidal Galaxies", *AJ*, 90, 1796.
34. Smecker-Hane, T.A., Stetson, P.B., Hesser, J.E., & Lehnert, M.D. 1994, "The Stellar Populations of the Carina Dwarf Spheroidal Galaxy. I. A New Color-Magnitude Diagram for the Giant and Horizontal Branches", *AJ*, 108, 507.
35. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ* 428, 617.
36. Zinnecker, H. 1994, "ROSAT Observations Towards the Carina and Sculptor Dwarf Galaxies", in *Dwarf Galaxies*, edited by G. Meylan and P. Prugniel (European Southern Observatory, Munich), p. 231.

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Draco

Alternate name(s): DDO 208

Right Ascension (2000): 17h 20m 19s

Declination (2000): +57d 54.8m

Type: dE3

Apparent magnitude (V): 10.9

Color (B-V): 0.87

(U-B): -0.11

(V-R):

Color Excess, E(B-V): 0.03

Absolute magnitude (M_V): -8.8

Distance (kpc): 86

Radial velocity (solar, km/sec): -296

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: 3 anomalous Cepheids; designation: V (a 4th is beyond chart edge)

Source: [8], [54]

Carbon stars: 4; designation: C

Source: [3], [7]

HII regions: none

Source:

Planetary nebulae: none

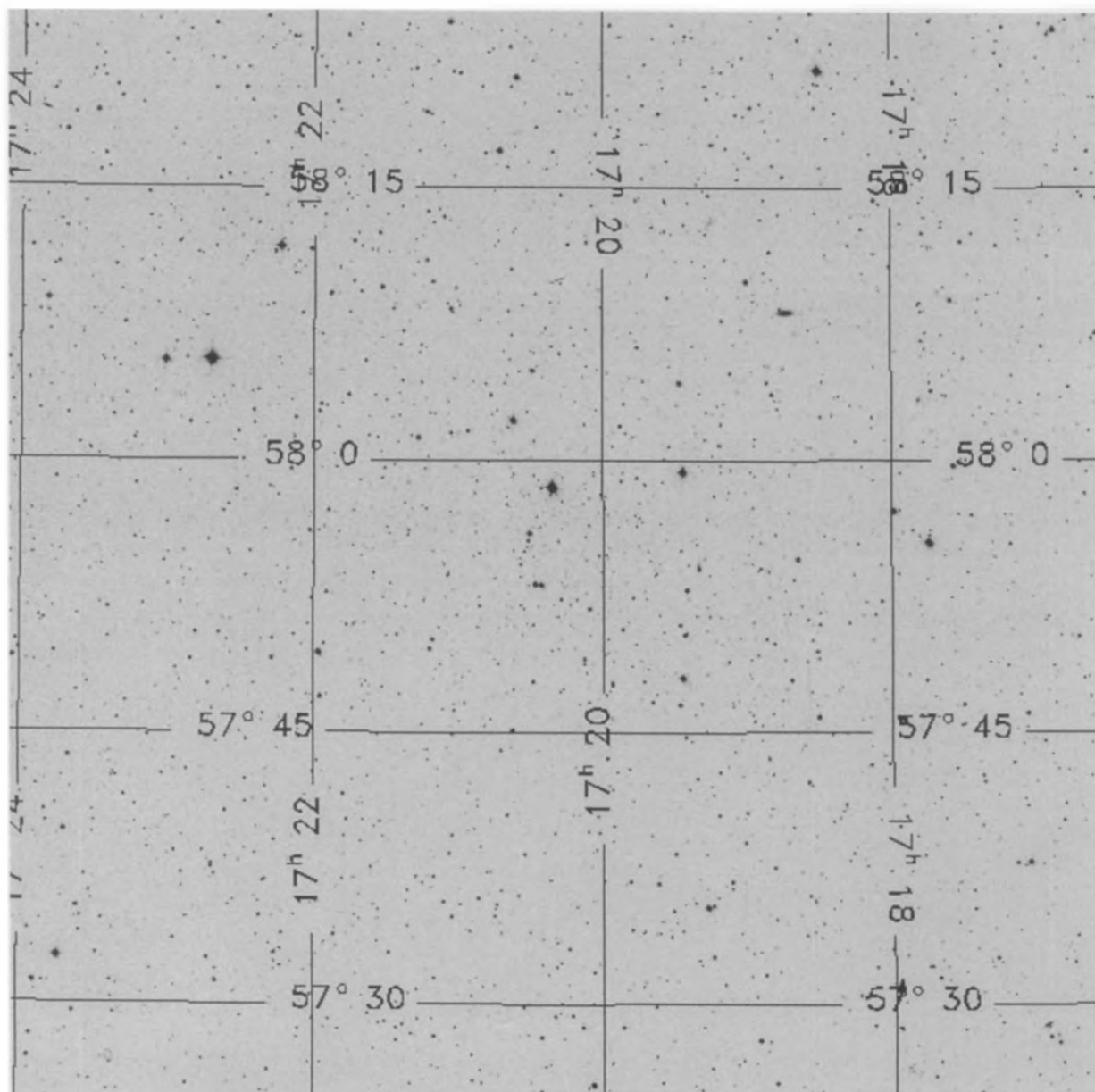
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Dust clouds: none

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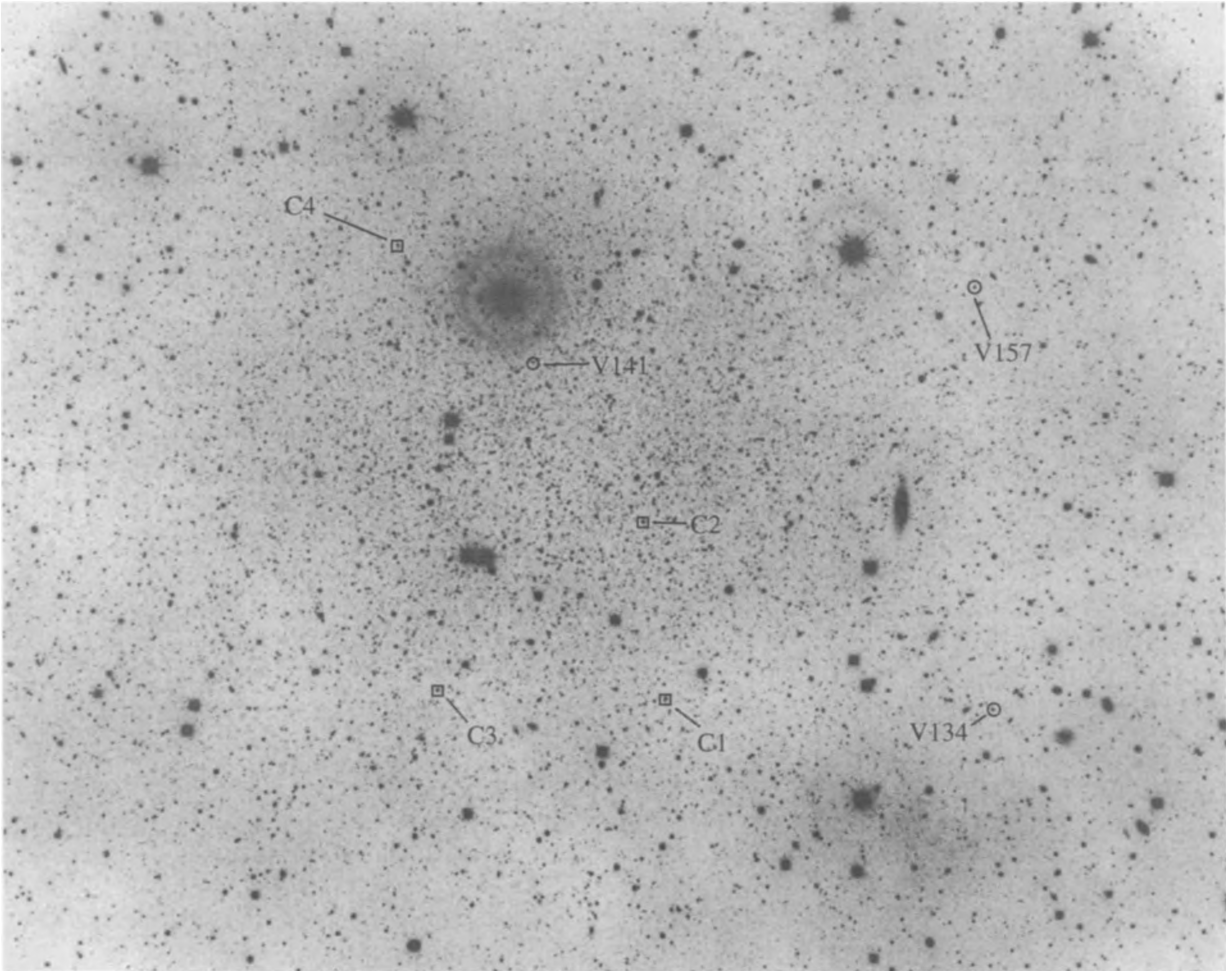
Draco

Chart 94



Draco

Chart 95



Draco

References

1. Aaronson, M. 1983, "Accurate Radial Velocities for Carbon Stars in Draco and Ursa Minor: The First Hint of a Dwarf Spheroidal Mass-to-Light Ratio", *ApJ*, 266, L11.
2. Aaronson, M. & Cook, K. 1983, "Weighing Draco – A Progress Report", *BAAS*, 15, 907.
3. Aaronson, M., Liebert, J., & Stocke, J. 1982, "Discovery of Carbon Stars in the Draco Dwarf Spheroidal Galaxy", *ApJ*, 254, 507.
4. Aaronson, M., & Mould, J. 1985, "Infrared Photometry and the Comparative Stellar Content of Dwarf Spheroidals in the Galactic Halo", *ApJ*, 290, 191.
5. Aaronson, M., & Olszewski, E. 1987, "The Search for Dark Matter in Draco and Ursa Minor: A Three-Year Progress Report", in *Dark Matter in the Universe*, IAU Symposium No. 117, edited by J. Kormendy and G.R. Knapp (Reidel, Dordrecht), p. 153.
6. Armandroff, T.E., Olszewski, E.W., & Pryor, C. 1995, "The Mass-to-Light Ratios of the Draco and Ursa Minor Dwarf Spheroidal Galaxies. I. Radial Velocities from Multifiber Spectroscopy", *AJ*, 110, 2131.
7. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1986, "New Carbon Stars in Spheroidal Galaxies. II. Draco, Ursa Minor, and New Data on Sculptor, Carina, and Leo I", *A&A*, 161, 232.
8. Baade, W., & Swope, H.H. 1961, "The Draco System, a Dwarf Galaxy", *AJ*, 66, 300.
9. Bell, R.A. 1985, "Abundances of Giant Stars in the Draco and Ursa Minor Dwarf Galaxies", *PASP*, 97, 219.
10. Bell, R.A., & Gustafsson, B. 1976, "Stellar Abundances in the Draco Dwarf Spheroidal Galaxy", *RGO Bull.*, 182, 109.
11. Bono, G., Caputo, F., Santolamazza, P., Cassisi, S., & Piersimoni, A. 1997, "Evolutionary Scenario for Metal-Poor Pulsating Stars. II. Anomalous Cepheids", *AJ*, 113, 2209.
12. Canterna, R. 1975, "Metal Abundances of Draco and Eight Galactic Globular Clusters", *ApJ*, 200, L63.
13. Canterna, R., & Schommer, R.A. 1978, "The Chemical Abundances of Extreme Population II Systems", *ApJ*, 219, L119.
14. Caputo, F., & Castellani, V. 1971, "On the Evolutionary Stage of Stars in the Draco Dwarf Galaxy", *Astrophys. & Sp. Sci.*, 14, 323.
15. Carney, B.W., & Seitzer, P. 1986, "Deep Photometry of the Draco Dwarf Spheroidal Galaxy", *AJ*, 92, 23.
16. Castellani, V. 1975, "On the Age of the Draco Dwarf Galaxy", *MNRAS*, 172, 59P.
17. Cowley, A.P., Hartwick, F.D.A., Sargent, W.L.W. 1978, "Spectra of Giant Stars in Distant Satellites of the Galaxy", *ApJ*, 220, 453.
18. Demers, S., Battinelli, P., Irwin, M.J., & Kunkel, W.E. 1995, "A Search for Stellar Aggregates in Dwarf Spheroidal Galaxies", *MNRAS*, 274, 491.
19. Duepree, R.G., & Hodson, S.W. 1977, "The Instability Strip of the Anomalous Cepheids in the Draco Dwarf Spheroidal Galaxy", *ApJ*, 218, 654.
20. Faber, S.M., & Lin, D.N.C. 1983, "Is there Nonluminous Matter in Dwarf Spheroidal Galaxies?", *ApJ*, 266, L17.

21. Geisler, D., & Sarajedini, A. 1996, "Standards Giant Branches in the Washington System: Calibration and Application to the Draco, Ursa Minor, and Sextans Dwarf Spheroidal Galaxies", in *Formation of the Galactic Halo... Inside and Out*, edited by H. Morrison and A. Sarajedini (Astronomical Society of the Pacific, San Francisco), p. 524.
22. Gerhard, O.E., & Spergel, D.N. 1992, "Dwarf Spheroidal Galaxies and the Mass of the Neutrino", *ApJ*, 389, L9.
23. Goranskij, V.P. 1982, "Double Mode RR Lyrae Stars in the Draco Dwarf Galaxy", *Astron. Tsirkulyar*, 1216, 5.
24. Hargreaves, J.C., Gilmore, G., Irwin, M.J., & Carter, D. 1996, "A Dynamical Study of the Draco Dwarf Spheroidal Galaxy", *MNRAS*, 282, 305.
25. Hartwick, F.D.A., & McClure, R.D. 1974, "Physical Characteristics of Giant Stars in the Draco Dwarf Spheroidal Galaxy", *ApJ*, 193, 321.
26. Hill, J.M., Olszewski, E.W., Lesser, M.P., Aaronson, M., & Eisenhamer, J.D. 1986, "New Member Giants in Dwarf Spheroidal Galaxies Using the MX Spectrometer", *BAAS*, 18, 996.
27. Hodge, P.W. 1964, "Distribution of Stars in the Draco Dwarf Galaxy", *AJ*, 69, 853.
28. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
29. Kinman, T.D., Carbon, D.F., Suntzeff, N.B., & Kraft, R.P. 1981, "Carbon Abundances in Giant Stars of the Draco Dwarf Galaxy", in *Astrophysical Parameters for Globular Clusters*, edited by A.G.D. Philip and D.S. Hayes (L. Davis Press, Schenectady), p. 451.
30. Kinman, T.D., & Kraft, R.P. 1980, "The Giant Stars of the Draco Dwarf Galaxy. I. Photometry and Exploratory Spectroscopy", *AJ*, 85, 415.
31. Kinman, T.D., Kraft, R.P., & Suntzeff, N.B. 1980, "On the Metal Abundance of Giants in the Draco Dwarf Galaxy – Preliminary Results of a Spectroscopic Survey", in *Physical Processes in Red Giants*, edited by A. Renzini and I. Iben, Jr. (Reidel, Dordrecht), p.71.
32. Knapp, G.R., Kerr, F.J., & Bowers, P.P. 1978, "Upper Limits to the H I Content of the Dwarf Spheroidal Galaxies", *AJ*, 83, 360.
33. Lake, G. 1990, "The Distribution of Dark Matter in Draco and Ursa Minor", *MNRAS*, 244, 701.
34. Lehnert, M.D., Bell, R.A., Hesser, J.E., & Oke, J.B. 1992, "Abundances for Giant Stars in the Draco Dwarf Galaxy", *ApJ*, 395, 466.
35. McClure, R.D., & Hesser, J.E. 1981, "Strengths of Spectral Features of Giant Stars in Outlying Halo Clusters", *ApJ*, 246, 136.
36. Munari, U. 1991, "BVI Photometry of the Symbiotic Star C-1 in the Draco Dwarf Galaxy", *Inf. Bull. Var. Stars* 3605.
37. Munari, U. 1991, "Spectroscopy of the Symbiotic Carbon Star C-1 in the Draco Dwarf Galaxy", *A&A*, 251, 103.
38. Munari, U. 1991, "Infrared Properties of the Carbon Symbiotic Star C-1 in the Draco Dwarf Galaxy", *Inf. Bull. Var. Stars* 3648.
39. Nemec, J.M. 1985, "Double-Mode RR Lyrae Stars in the Draco Dwarf Galaxy", *AJ*, 90, 204.
40. Nemec, J.M., Nemec, A.F.L., & Lutz, T.E. 1994, "Period-Luminosity-Metallicity Relations, Pulsation Modes, Absolute Magnitudes, and Distances for Population II Variable Stars", *AJ*, 108, 222.
41. Norris, J., & Zinn, R. 1975, "The Cepheid Variables and the Stellar Populations of the Dwarf Spheroidal Galaxies", *ApJ*, 202, 335.

42. Olszewski, E.W., Aaronson, M., & Hill, J.M. 1995, "Nine Seasons of Velocity Measurements in the Draco and Ursa Minor Dwarf Spheroidal Galaxies with the MMT Echelle", *AJ*, 110, 2120.
43. Olszewski, E.W., Pryor, C., & Armandroff, T.E. 1996, "The Mass-to-Light Ratios of the Draco and Ursa Minor Dwarf Spheroidal Galaxies. II. The Binary Population and its Effect on the Measured Velocity Dispersions of Dwarf Spheroidals", *AJ*, 111, 750.
44. Pryor, C., & Kormendy, J. 1990, "The Dark Matter Halos of Draco and Ursa Minor", *AJ*, 100, 127.
45. Silberman, N.A., Harris, H.C., & Smith, H.A. 1996, "Variable Stars in the Draco Dwarf Spheroidal Galaxy", in *Formation of the Galactic Halo... Inside and Out*, edited by H. Morrison and A. Sarajedini (Astronomical Society of the Pacific, San Francisco), p. 536.
46. Smith, G.H. 1984, "The Chemical Inhomogeneity of the Draco Dwarf Spheroidal Galaxy", *AJ*, 89, 801.
47. Stetson, P.B. 1979, "The Dwarf Spheroidal Galaxy in Draco. I. New *BV* Photometry", *AJ*, 84, 1149.
48. Stetson, P.B. 1979, "The Dwarf Spheroidal Galaxy in Draco. II. Galactic Foreground Reddening", *AJ*, 84, 1167.
49. Stetson, P.B. 1980, "The Dwarf Spheroidal Galaxy in Draco. III. Proper Motion Membership Probabilities", *AJ*, 85, 387.
50. Stetson, P.B. 1980, "The Dwarf Spheroidal Galaxy in Draco. IV. On the Mean Metal Abundance and Metal-Abundance Range of the Red Giant Stars", *AJ*, 85, 398.
51. Stetson, P.B., "Spectroscopy of Giant Stars in the Draco and Ursa Minor Dwarf Galaxies", *PASP*, 96, 128.
52. Stetson, P.B., VandenBergh, D.A., & McClure, R.D. 1985, "The Main-Sequence Turnoff of the Draco Dwarf Galaxy", *PASP*, 97, 908.
53. Strobel, N.V., & Lake, G. 1994, "Black Hole Models for the Dark Matter in Draco and Ursa Minor", *ApJ*, 424, L83.
54. Swope, H.H. 1968, "Thirteen Periodic Variable Stars Brighter than the Normal RR Lyrae-Type Variables in Four Dwarf Galaxies", *AJ*, 73, S204.
55. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.
56. Wehlau, A., & Demers, S. 1986, "Magnitudes of Bright Variables in the Draco Dwarf Galaxy", *Inf. Bull. Var. Stars* 2914.
57. Wilson, A.G. 1955, "Sculptor-Type Systems in the Local Group of Galaxies", *PASP*, 67, 27.
58. Zinn, R. 1978, "The Metal Abundance Range in the Draco Dwarf Galaxy", *ApJ*, 225, 790.
59. Zinn, R. 1980, "On the Metal Abundance Range in the Draco Dwarf Galaxy", *AJ*, 85, 1468.
60. Zinn, R., & Searle, L. 1976, "The Masses of the Anomalous Cepheids in the Draco System", *ApJ*, 209, 734.

Fornax

Alternate name(s): A 0237-34

Right Ascension (2000): 02h 39m 59s

Declination (2000): -34d 27.0m

Type: dE3

Apparent magnitude (V): 7:6

Color (B-V): 0.63

(U-B): 0.08

(V-R): 0.45

Color Excess, E(B-V): 0.03

Absolute magnitude (M_V): -13.1

Distance (kpc): 138

Radial velocity (solar, km/sec): 55

Objects Identified On the Atlas:

Globular clusters: 5; designation: GC

Source:[34]

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: 30 long period variables, 2 Cepheids (not shown)

Source:[16], [47]

Carbon stars: 25 (not shown)

Source:[1], [5], [26]

HII regions: none

Source: none

Planetary nebulae: 1; designation: PN

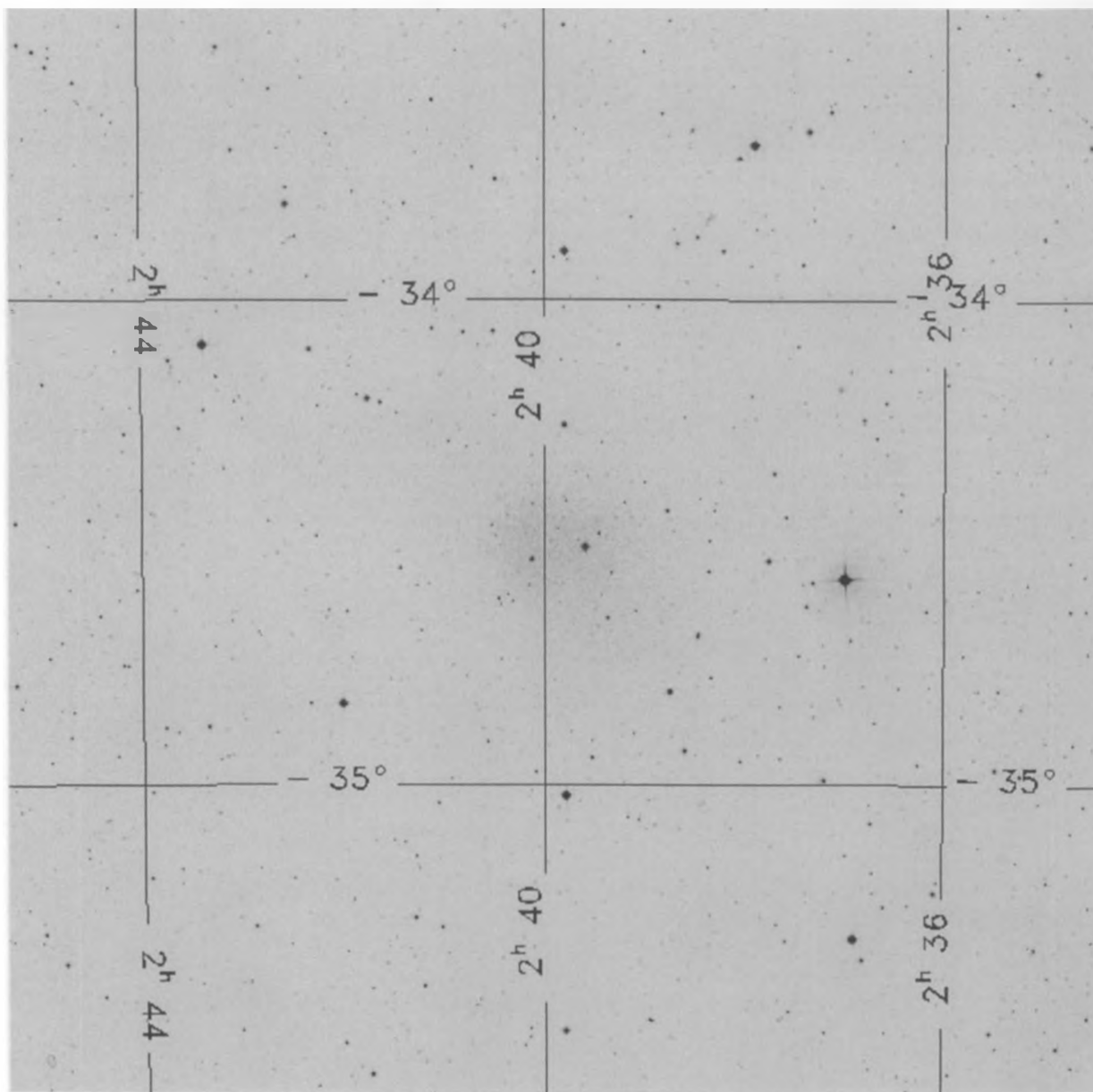
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Dust clouds: none

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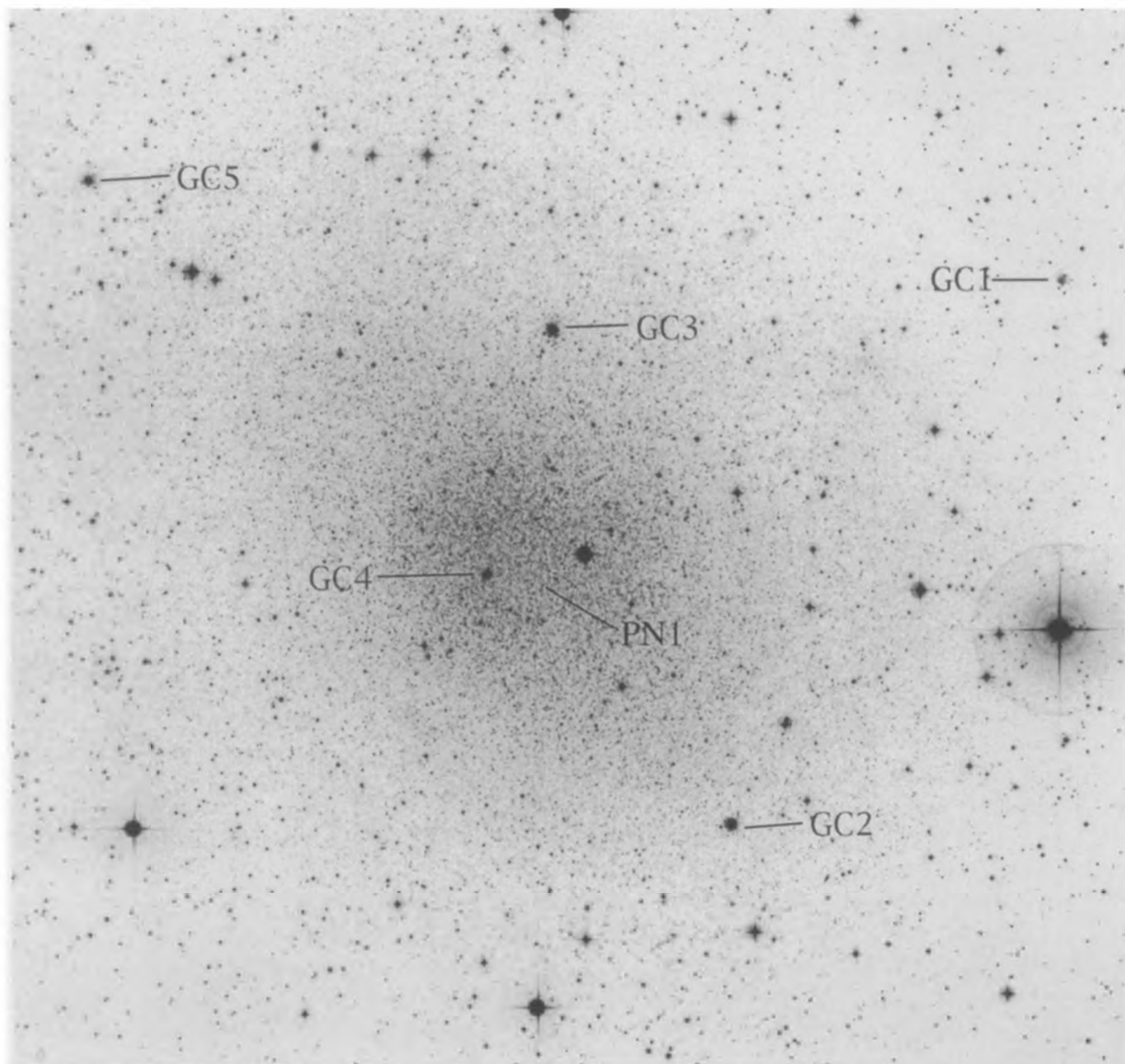
Fornax

Chart 96



Fornax

Chart 97



Fornax

References

1. Aaronson, M., & Mould, J. 1980, "Carbon Stars in the Fornax Dwarf Spheroidal Galaxy", *ApJ*, 240, 804.
2. Aaronson, M., & Olszewski, E.W. 1986, "Accurate Radial Velocities for Three Fornax Globular Clusters", *AJ*, 92, 580.
3. Baade, W., & Hubble, E. 1939, "The New Stellar Systems in Sculptor and Fornax", *PASP*, 51, 40.
4. Beauchamp, D., Hardy, E., Suntzeff, N.B., & Zinn, R. 1995, "Color-Magnitude Diagrams for Clusters 2 and 4, and the Field in the Fornax Dwarf Spheroidal Galaxy", *AJ*, 109, 1628.
5. Breysacher, J., & Lequeux, J. 1983, "Search for Wolf-Rayet, Carbon and M Stars in External Galaxies with the GRISM/GRENS Technique", *The Messenger*, 33, 21.
6. Brodie, J.P., & Huchra, J.P. 1991, "Extragalactic Globular Clusters. III. Metallicity Comparisons and Anomalies", *ApJ*, 379, 157.
7. Buonanno, R., Corsi, C.E., Fusi Pecci, F., Hardy, E., & Zinn, R. 1985, "Color-Magnitude Diagrams for the Clusters and the Field of the Fornax Dwarf Spheroidal Galaxy", *A&A*, 152, 65.
8. Catelan, M. 1997, "Color-Magnitude Diagrams of Merged Globular Clusters: Metallicity Effects", *ApJ*, 478, L99.
9. Cohen, J.G. 1983, "The Velocity Dispersion of the Globular Clusters in the Fornax Dwarf Galaxy", *ApJ*, 207, L41.
10. Danziger, I.J. 1973, "A Photometric Study of the Integrated Light of Clusters in the Magellanic Clouds and the Fornax Dwarf Galaxy", *ApJ*, 181, 641.
11. Danziger, I.J., Dopita, M.A., Hawarden, T.G., & Webster, B.L. 1978, "The Planetary Nebula in the Fornax Dwarf Galaxy", *ApJ*, 220, 458.
12. de Vaucouleurs, G., & Ables, H.D. 1967, "Integrated Magnitudes and Color Indices of the Fornax Dwarf Galaxy", *ApJ*, 151, 105.
13. de Vaucouleurs, G., & Ables, H.D. 1970, "Magnitude and Colors of Globular Clusters in the Fornax System", *ApJ*, 159, 425.
14. Demers, S. 1969, "Integrated Magnitudes and Colors of the Four Brightest Globular Clusters in Fornax", *Astrophysical Letters*, 3, 175.
15. Demers, S., Battinelli, P., Irwin, M.J., & Kunkel, W.E. 1995, "A Search for Stellar Aggregates in Dwarf Spheroidal Galaxies", *MNRAS*, 274, 491.
16. Demers, S., & Irwin, M.J. 1987, "The Long-Period Variables of Fornax – I. Search, Discovery, and Periods", *MNRAS*, 226, 943.
17. Demers, S., Irwin, M.J., & Kunkel, W.E. 1994, "Large Scale Photographic Survey of Fornax", *AJ*, 108, 1648.
18. Demers, S., & Kunkel, W.E. 1979, "Discovery of Very Red Giants in the Fornax Galaxy", *PASP*, 91, 761.
19. Demers, S., Kunkel, W.E., & Grondin, L. 1990, "CCD Photometry of Cluster 1 of Fornax", *PASP*, 102, 632.
20. Demers, S., Kunkel, W.E., & Hardy, E. 1979, "The Giant Branch of Fornax", *ApJ*, 232, 84.
21. Dubath, P., Meylan, G., & Mayor, M. 1992, "Core Velocity Dispersions and Metallicities of Three Globular Clusters Belonging to the Fornax Dwarf Spheroidal Galaxy", *ApJ*, 400, 510.

22. Eskridge, P.B. 1987, "The Global Luminosity Function of the Fornax Dwarf Elliptical Galaxy", *AJ*, 94, 1564.
23. Eskridge, P.B. 1988, "The Structure of the Fornax Dwarf Elliptical Galaxy. I. The Radial Profile", *AJ*, 96, 1352.
24. Eskridge, P.B. 1988, "The Structure of the Fornax Dwarf Elliptical Galaxy. II. Two-Dimensional Structure", *AJ*, 96, 1614.
25. Faber, S.M., & Lin, D.N.C. 1983, "Is There Nonluminous Matter in Dwarf Spheroidal Galaxies?", *ApJ*, 266, L17.
26. Frogel, J.A., Blanco, V.M., & McCarthy, M.F. 1982, "The Late-Type Stellar Content of the Fornax and Sculptor Dwarf Galaxies", *ApJ*, 252, 133.
27. Gizis, J.E., Mould, J.R., & Djorgovski, S. 1993, "An X-ray Image of The Fornax Dwarf Spheroidal Galaxy", *PASP*, 105, 871.
28. Gordon, K.C., & Kron, G.E. 1983, "Integrated Magnitudes and Colors of Clusters in the Magellanic Clouds and Fornax System", *PASP*, 95, 461.
29. Gratton, R.G., Ortolani, S., & Richter, O. 1986, "The Dwarf Galaxies in Fornax and in Phoenix", *MSAIt*, 57, 561,
30. Grebel, E.K., Roberts, W.J., & van de Rydt, F. 1994, "Population Studies in Dwarf Spheroidal Galaxies: Washington Photometry of Sculptor and Fornax", in *The Local Group: Comparative and Global Properties*, edited by A. Layden, R.C. Smith, and J. Storm (European Southern Observatory, Munich), p. 148.
31. Grillmair, C.J., et al. 1997, "WFPC2 Observations of the Fornax Dwarf Spheroidal", *BAAS*, 29, 1341.
32. Harris, H.C., & Canterna, R. 1977, "Integrated Colors of Globular Clusters in the Galaxy, Fornax, and M31", *AJ*, 82, 798.
33. Harris, W.E. 1983, "A Comment on the Colors of Globular Clusters in Elliptical Galaxies", *PASP*, 95, 21.
34. Hodge, P.W. 1961, "The Fornax Dwarf Galaxy. I. The Globular Clusters", *AJ*, 66, 83.
35. Hodge, P.W. 1961, "The Fornax Dwarf Galaxy. II. The Distribution of Stars", *AJ*, 66, 249.
36. Hodge, P.W. 1965, "Integrated Photometry of the Clusters of the Fornax Dwarf Galaxy", *ApJ*, 141, 308.
37. Hodge, P.W. 1969, "The Color Indices of the Globular Clusters of the Fornax Dwarf Galaxy", *PASP*, 81, 875.
38. Hodge, P.W., & Smith, D.W. 1974, "The Structure of the Fornax Dwarf Galaxy", *ApJ*, 188, 19.
39. Huchra, J.P., Brodie, J.P., Caldwell, N., Christian, C., & Schommer, R. 1996, "Extragalactic Globular Clusters. IV. The Data", *ApJS*, 102, 29.
40. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
41. Jarvis, B., & Seitzer, P. 1990, "Resolving the Fornax Globular Clusters with the NTT", *Messenger*, 59, 52.
42. Jones, T.J., & Hyland, A.R. 1982, "Multiaperture *JHK* Photometry of the Globular Clusters of the Fornax Dwarf Spheroidal Galaxy", *MNRAS*, 200, 509.
43. Jørgensen, U.G., & Jimenez, R. 1997, "Globular Clusters 1 and 3 in the Fornax Dwarf Galaxy", *A&A*, 317, 54.
44. Knapp, G.R., Kerr, F.J., & Bowers, P.P. 1978, "Upper Limits to the H I Content of the Dwarf Spheroidal Galaxies", *AJ*, 83, 360.

45. Kron, G.E., & Mayall, N.U. 1960, "Photoelectric Photometry of Galactic and Extragalactic Star Clusters", *AJ*, 65, 581.
46. Light, R.M. 1987, "Measurement of Abundances and their Variations in Dwarf Spheroidal Galaxies", *BAAS*, 19, 1033.
47. Light, R.M., Armandroff, T.E., & Zinn, R. 1986, "Two Cepheid Variables in the Fornax Dwarf Galaxy", *AJ*, 92, 43.
48. Lundgren, K. 1990, "Red Giants in the Fornax Dwarf Elliptical Galaxy", *A&A*, 233, 21.
49. Lynden-Bell, D., Cannon, R.D., & Godwin, P.J. 1983, "Slippery Evidence on the Galaxy's Invisible Heavy Halo", *MNRAS*, 204, 87P.
50. Mateo, M. 1992, "Hunting for Dark Matter", in *Carnegie Institution of Washington Yearbook 91* (Port City Press, Baltimore), p. 34.
51. Mateo, M., Olszewski, E., Welch, D.L., Fischer, P., & Kunkel, W. 1991, "A Kinematic Study of the Fornax Dwarf Spheroidal Galaxy", *AJ*, 102, 914.
52. Mateo, M., Olszewski, E., Welch, D.L., Fischer, P. & Kunkel, W. 1991, "The Dark Matter Content of the Fornax and Carina Dwarf galaxies", *BAAS*, 23, 919.
53. McDowell, J.C., & Godwin, P.J. 1986, "An Accurate Position and Radial Velocity for the Planetary Nebula in the Fornax Dwarf Galaxy", *Observatory*, 106, 19.
54. Paltoglou, G. 1989, "The Nature of the Fornax Dwarf Spheroidal Galaxy", *BAAS*, 21, 1130.
55. Paltoglou, G., & Freeman, K.C. 1987, "Dynamics of the Fornax Dwarf Spheroidal Galaxy", in *Structure and Dynamics of Elliptical Galaxies*, IAU Symposium No. 127, edited by T. de Zeeuw (Reidel, Dordrecht), p. 447.
56. Rodgers, A.W., & Harding, P. 1989, "Spectroscopy of the Globular Clusters in the Fornax Dwarf Elliptical Galaxy", *PASP*, 101, 563.
57. Rodgers, A.W., & Roberts, W.H. 1994, "Structure of the Globular Clusters in the Fornax Dwarf Elliptical Galaxy", *AJ*, 107, 1737.
58. Sagar, R., Hawkins, M.R.S., & Cannon, R.D. 1990, "The Giant Branch of the Fornax Spheroidal Galaxy", *MNRAS*, 242, 167.
59. Seitzer, P., & Frogel, J.A. 1985, "Radial Velocities of Carbon Stars in Three Dwarf Spheroidal Galaxies", *AJ*, 90, 1796.
60. Shapley, H. 1938, "Two Stellar Systems of a New Kind", *Nature*, 142, 715.
61. Shapley, H. 1939, "Galactic and Extragalactic Studies. II. Notes on the Peculiar Stellar Systems in Sculptor and Fornax", *Proceedings of the NAS*, 25, 565.
62. Smith, E.O., Neill, J.D., Mighell, K.J., & Rich, R.M. 1996, "Fornax Globular Clusters 1 and 5: A Confirmed Extragalactic Second Parameter Pair", *AJ*, 111, 1596.
63. Tinney, C.G. 1995, "A Gravitational Lens Candidate behind the Fornax Dwarf Spheroidal Galaxy", *MNRAS*, 277, 609.
64. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.
65. van den Bergh, S. 1996, "Mergers of Globular Clusters", *ApJ*, 471, L31.
66. Verner, G., Demers, S., Hardy, E., & Kunkel, W.E. 1981, "The Globular Clusters of Fornax", *AJ*, 86, 357.
67. Webbink, R.F. 1985, "Structure Parameters of Galactic Globular Clusters", in *Dynamics of Star Clusters*, IAU Symposium No. 113, edited by J. Goodman and P. Hut (Reidel, Dordrecht), p. 541.
68. Westerlund, B.E. 1979, "Red Stars in Nearby Galaxies", *ESO Messenger*, 19, 7.

69. Westerlund, B.E. 1983, "Discovery of an S Star in the Fornax Dwarf Elliptical Galaxy", A&A, 118, L5.
70. Westerlund, B.E., Edvardsson, B., & Lundgren, K. 1987, "Red Stars in the Fornax Dwarf Galaxy", A&A, 178, 41.
71. Zinn, R. 1992, "The Dwarf Spheroidal Satellite Galaxies of the Milky Way", in *The Globular Cluster-Galaxy Connection: Globular Clusters in the Context of Their Parent Galaxies*, edited by G.H. Smith and J.P. Brodie.
72. Zinn, R., & Persson, S.E. 1981, "The Ages and Metallicities of the Globular Clusters in the Fornax Dwarf Spheroidal Galaxy", ApJ, 247, 849.

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IC 10

Alternate name(s): UGC 192

Right Ascension (2000): 00h 20m 25s

Declination (2000): 59d 17.5m

Type: dIrr

Apparent magnitude (V): 11.55

Color (B-V): 1.37

(U-B): 0.28

(V-R):

Color Excess, E(B-V): 0.87

Absolute magnitude (M_V): -15.6

Distance (kpc): 825

Radial velocity (solar, km/sec): -344

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: 13; designation: A

Source: this atlas

Variable stars: 13; designation: Arabic numerals

Source: [36]

Carbon stars: none

Source:

HII regions: 144; designation: Arabic numerals

Source: [17]

Planetary nebulae: none

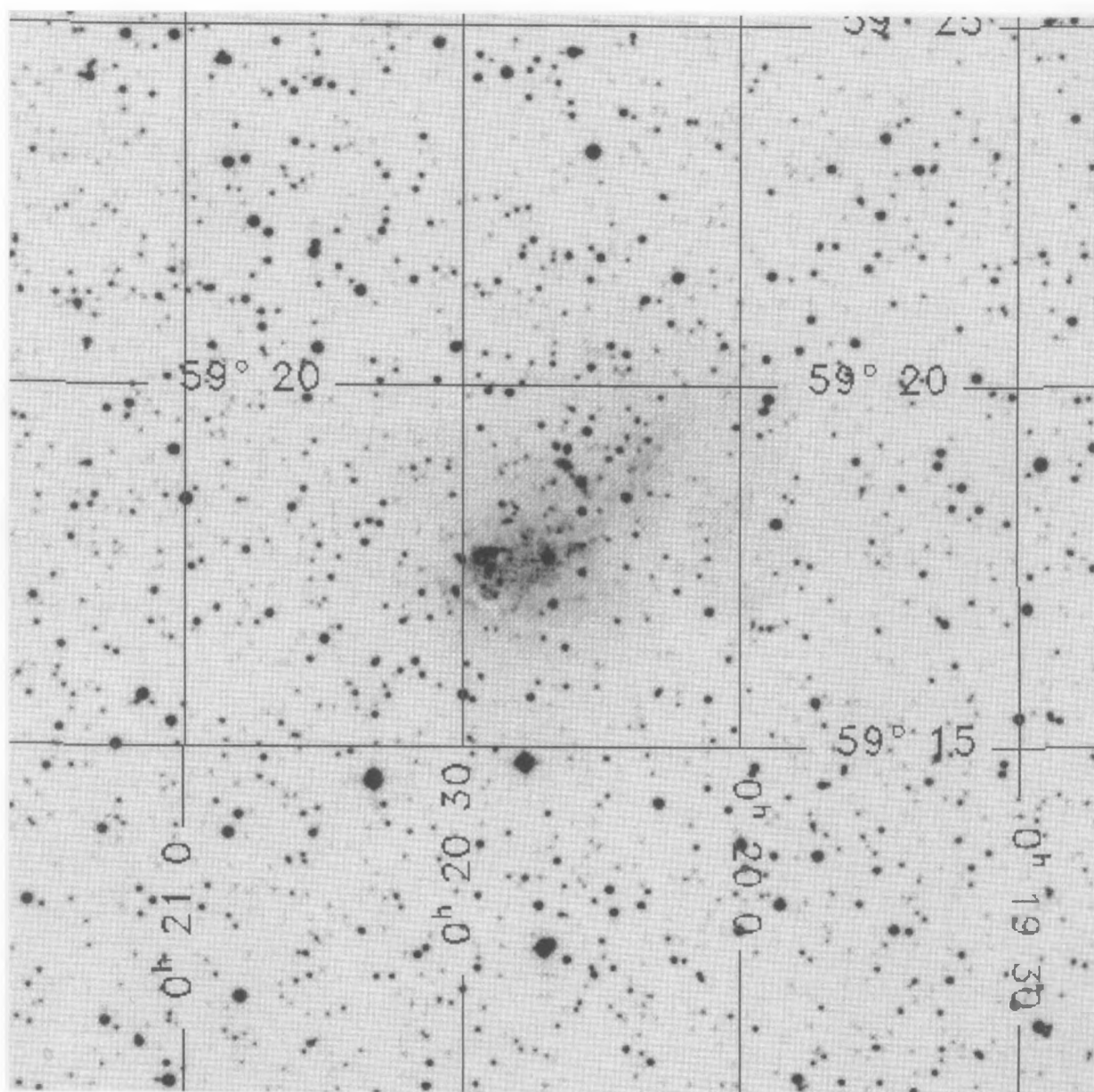
Source:

Dust clouds: 4; designation: D

Source: [this atlas]

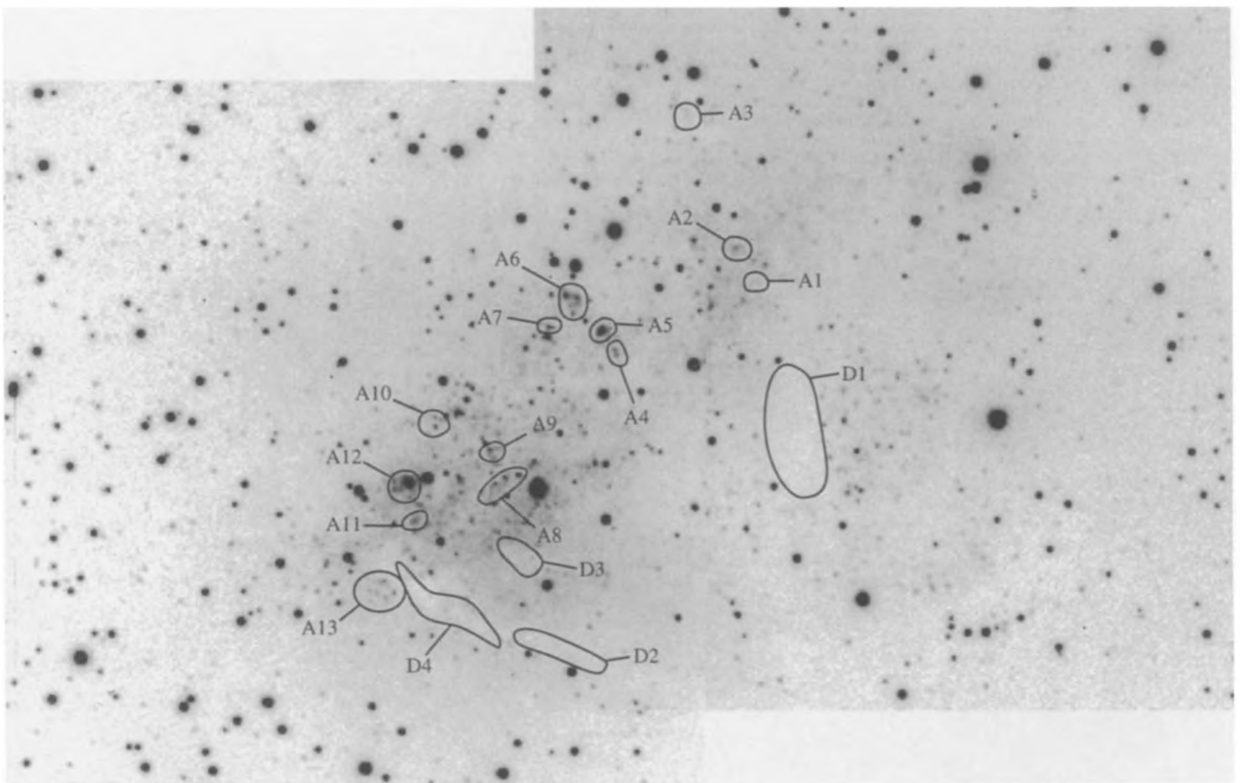
IC 10

Chart 98



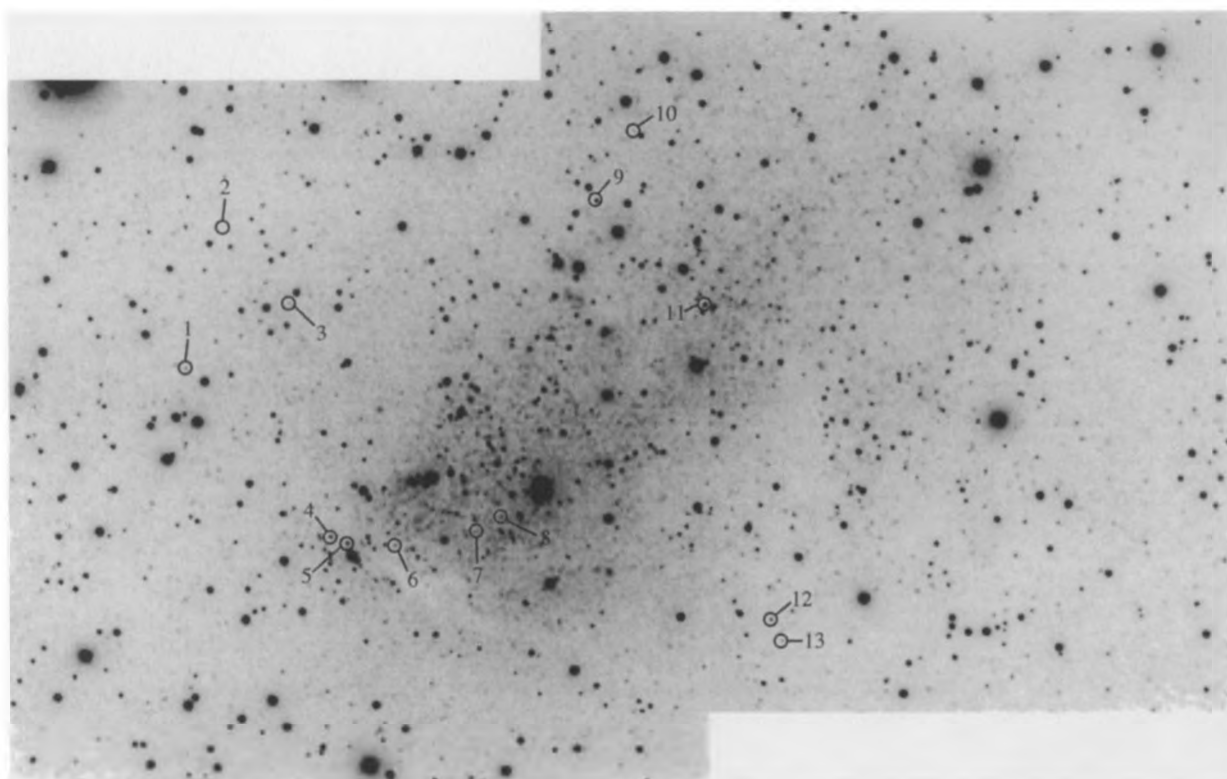
IC 10

Chart 99



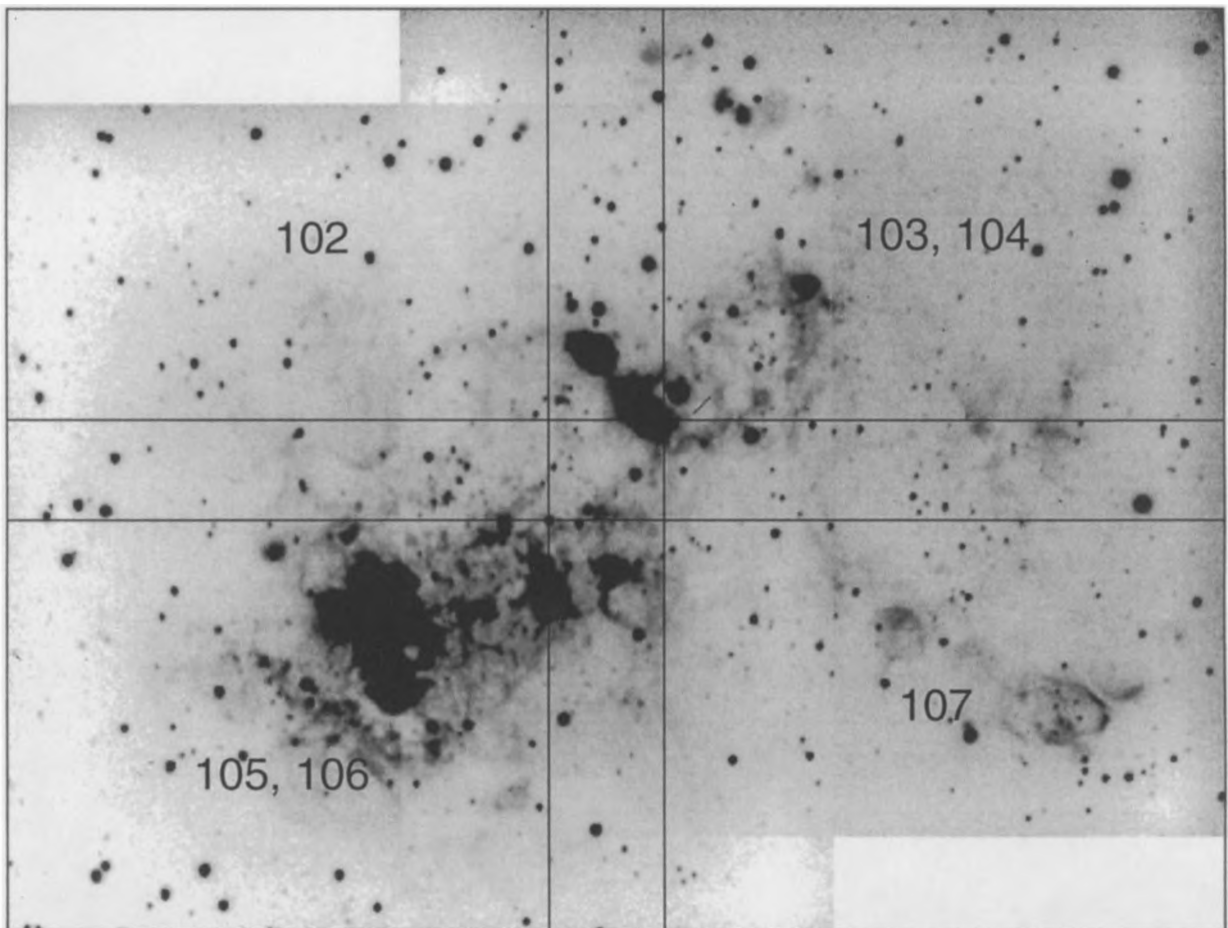
IC 10

Chart 100



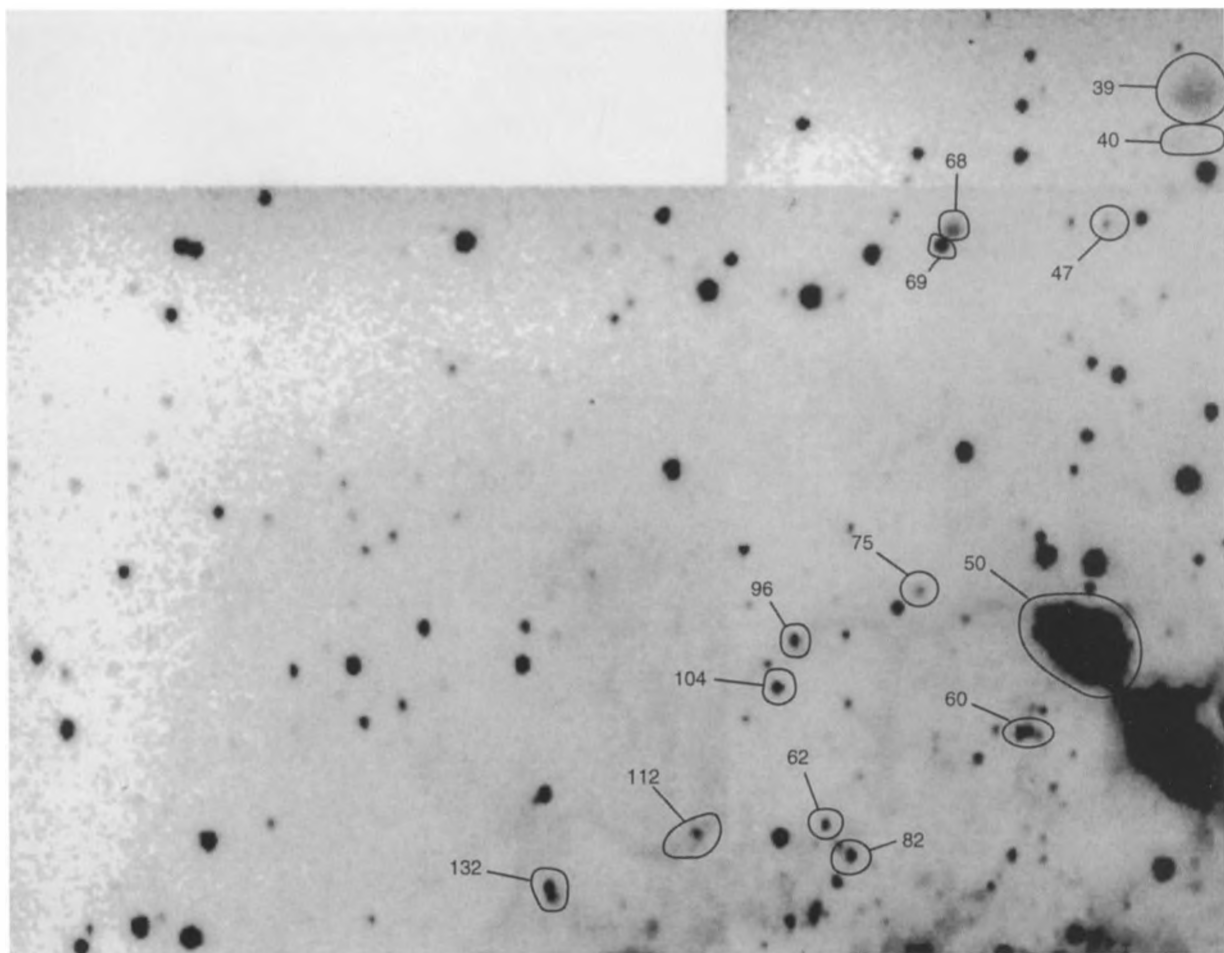
IC 10

Chart 101



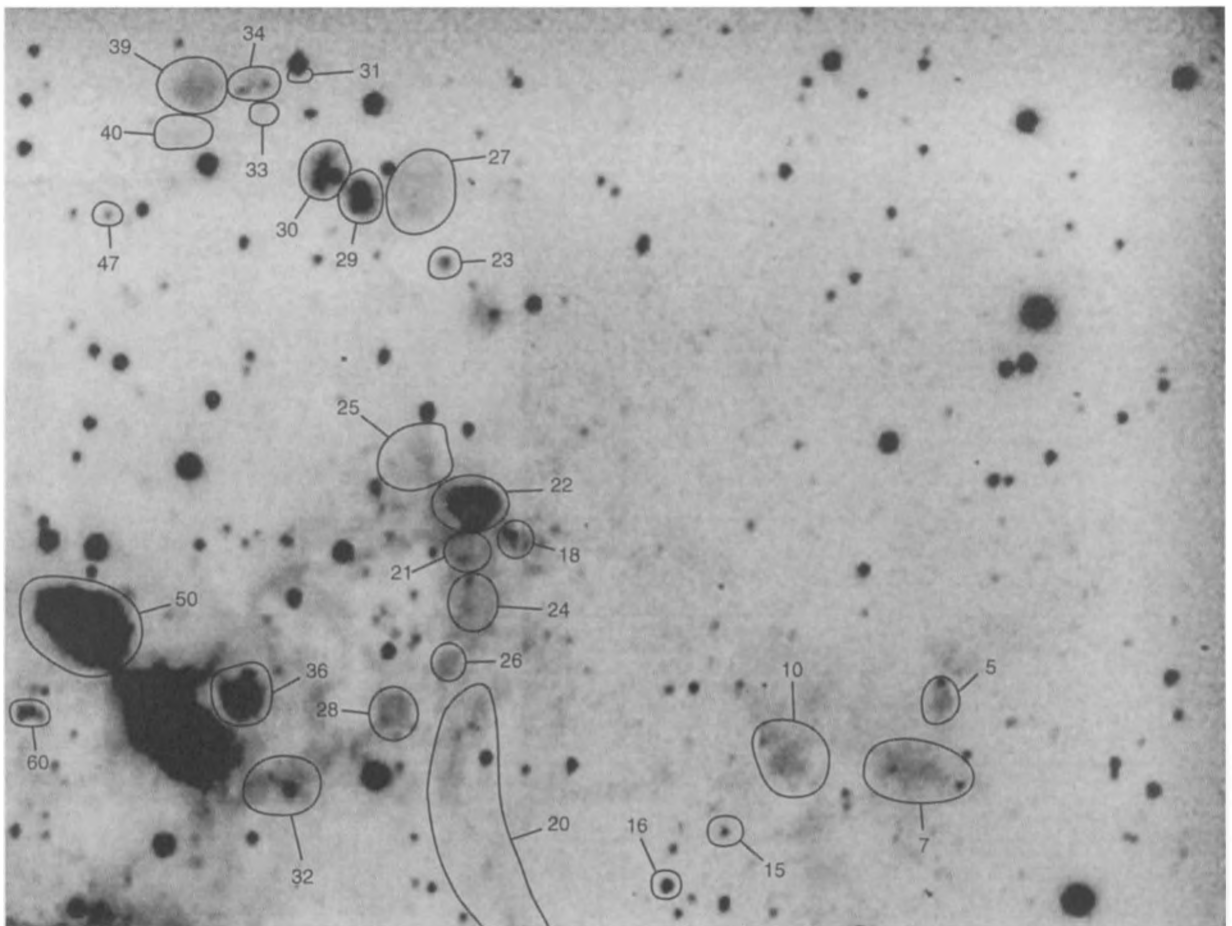
IC 10

Chart 102



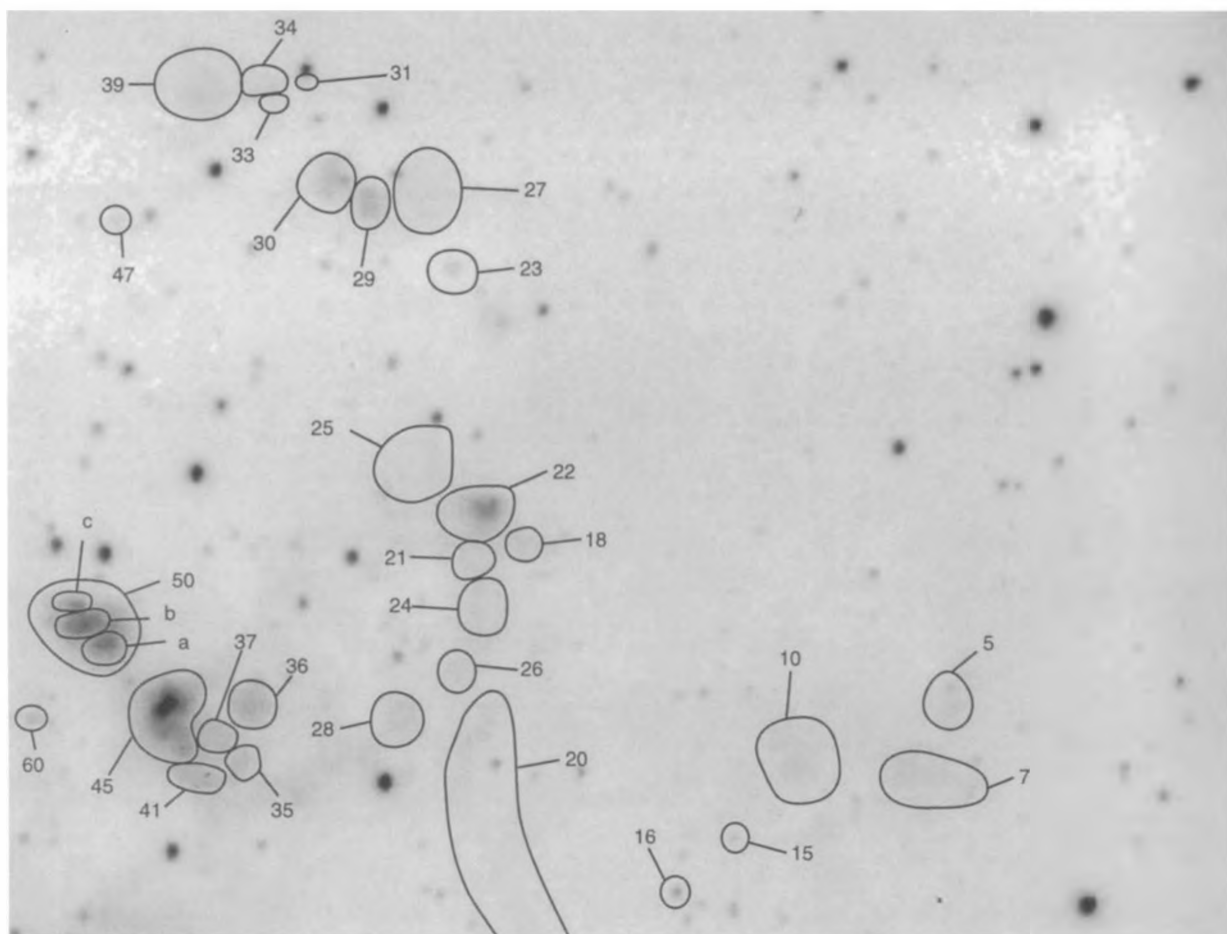
IC 10

Chart 103



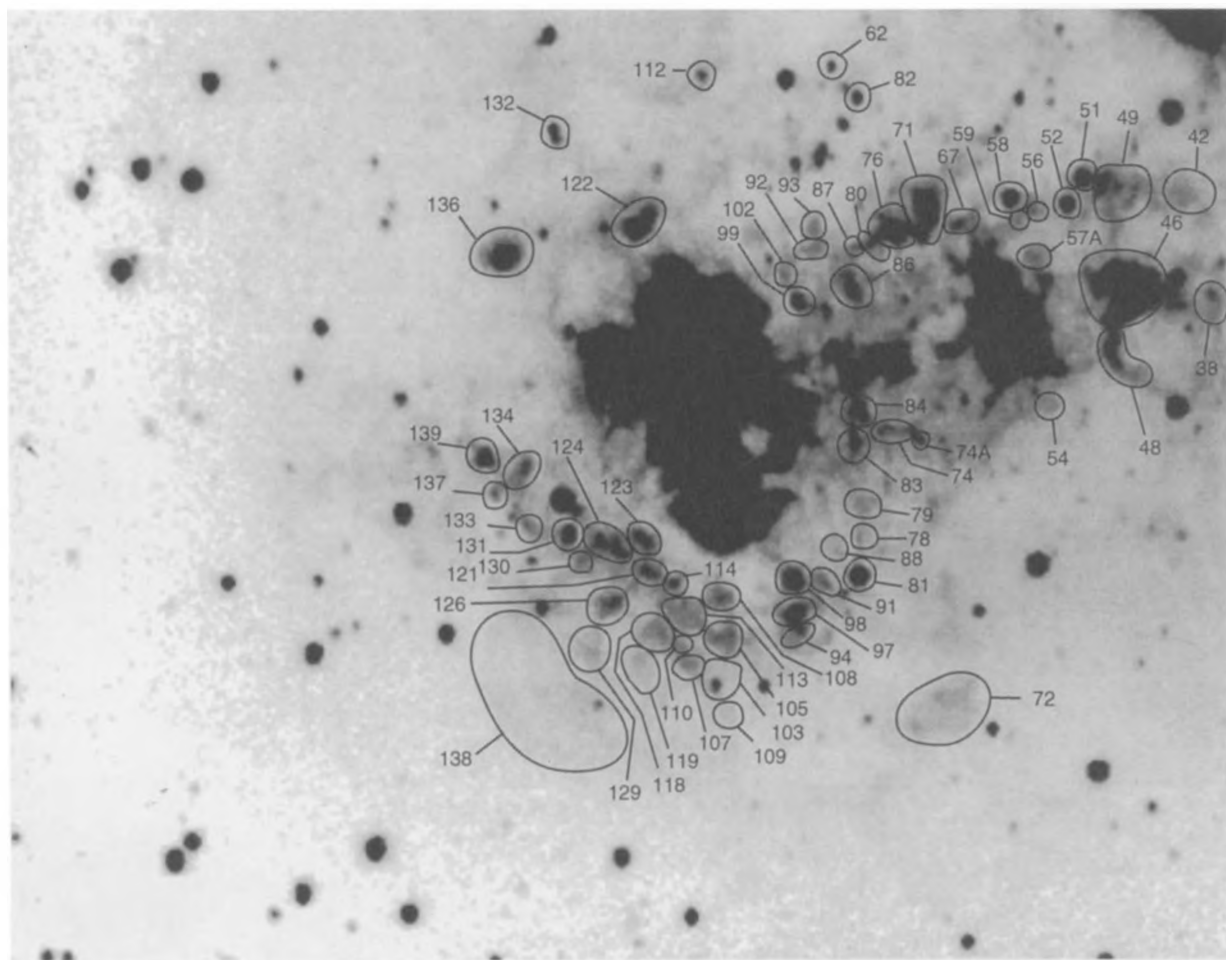
IC 10

Chart 104



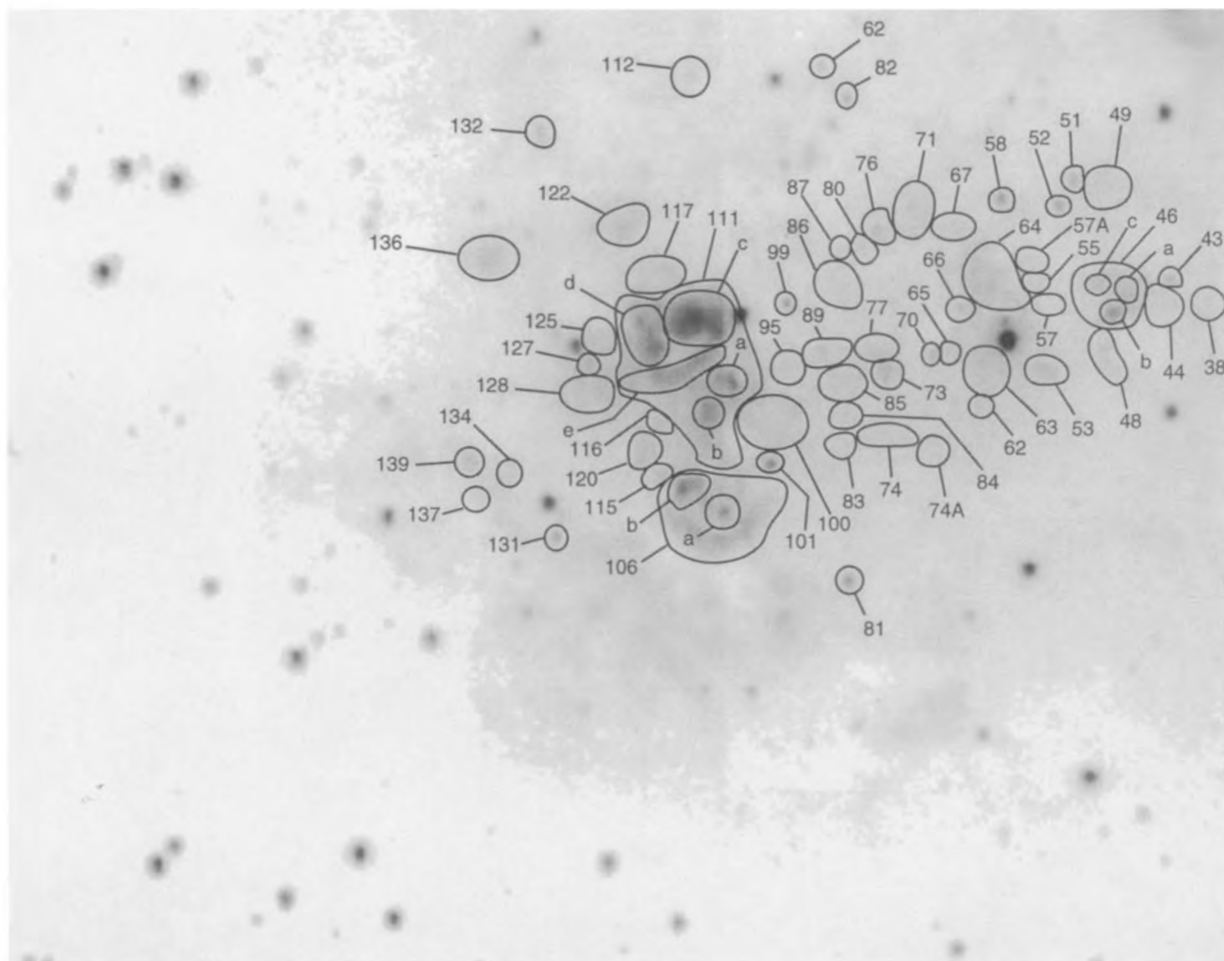
IC 10

Chart 105



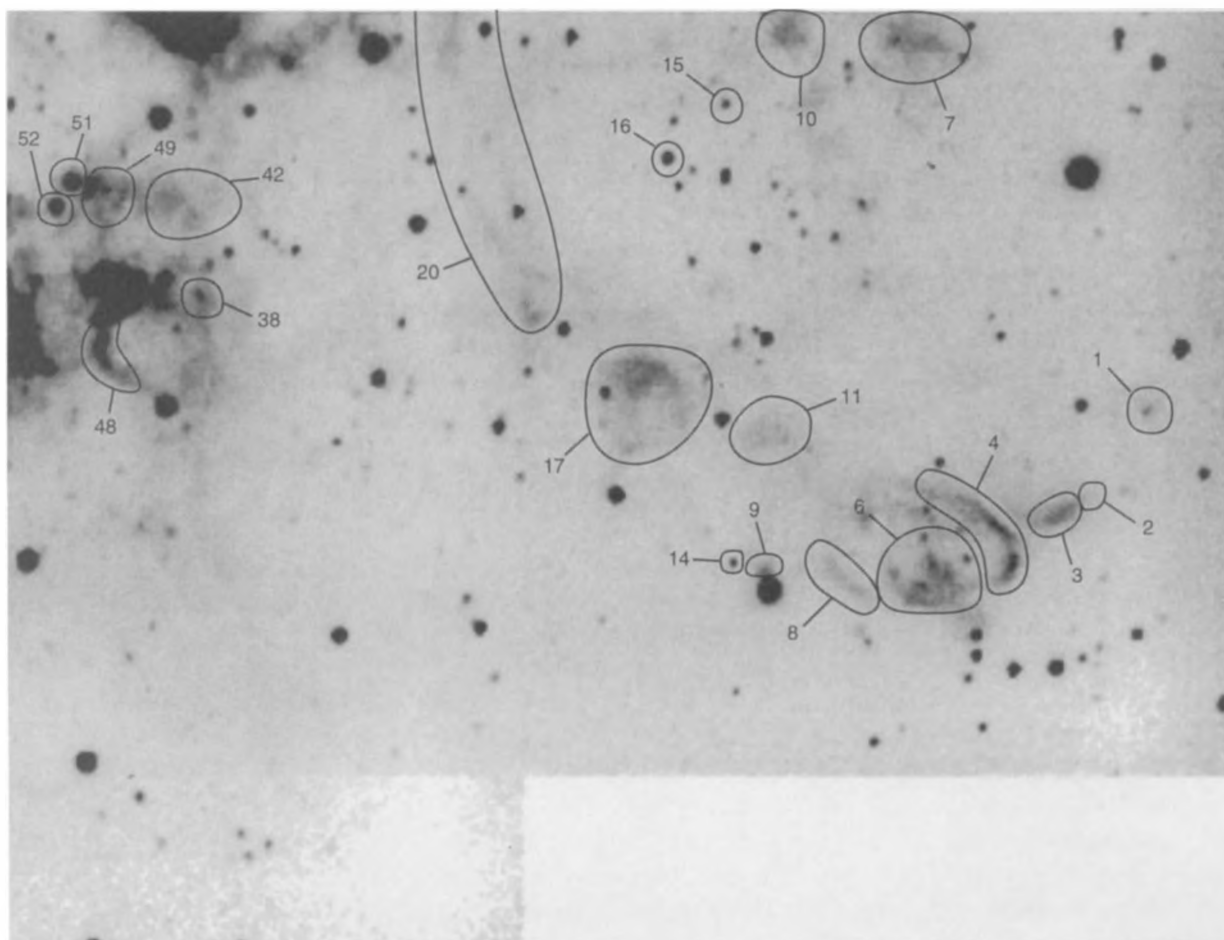
IC 10

Chart 106



IC 10

Chart 107



IC 10

References

1. Argon, A.L., Greenhill, L.J., Moran, J.M., Reid, M.J., Menten, K.M., Henkel, C., & Inoue, M. 1994, "The Angular Structure and Intraday Variability of a Water Vapor Maser in IC 10", *ApJ*, 422, 586.
2. Baan, W.I., & Haschick, A. 1994, "The H₂O Masers in IC 10 SE", *ApJ*, 424, L33.
3. Becker, R., Henkel, C., Schilke, P., Wilson, T.L., Wouterloot, J.G.A., & Appenzeller, I. 1989, "Giant Molecular Cloud Complexes in Irregular Galaxies", in *The Physics and Chemistry of Interstellar Molecular Clouds*, edited by G. Winnewisser and J.T. Armstrong, p. 276.
4. Becker, R., Henkel, C., Wilson, T.L., & Wouterloot, J.G.A. 1993, "H₂O Masers in Nearby Irregular Galaxies", *A&A*, 268, 483.
5. Bica, M.D., & Helou, G. 1990, "The 60 Micron to 20 Centimeter Infrared-to-Radio Ratio Within Spiral Galaxies", *ApJ*, 362, 59.
6. Bottinelli, L., Gouguenheim, L., & Heidmann, J. 1972, "21-cm Line Study of the Heavily Obscured Galaxy IC 10", *A&A*, 18, 121.
7. Brandt, W.N., Ward, M.J., Fabian, A.C., & Hodge, P.W. 1997, "ROSAT HRI Observations of the Local Group Galaxies IC 10, NGC 147 and NGC 185", *MNRAS*, 291, 709.
8. Cohen, R.J. 1979, "The Unusual Kinematics of the Galaxy IC 10", *MNRAS*, 187, 839.
9. de Vaucouleurs, G., & Ables, H. 1965, "Integrated Magnitudes and Color Indices of IC 10", *PASP*, 77, 272.
10. Dean, J.F., & Davies, R.D. 1975, "The Integrated Neutral Hydrogen Properties of Nearby Galaxies", *MNRAS*, 170, 503.
11. Fitt, A.J., & Alexander, P. 1993, "Magnetic Fields in Late-Type Galaxies", *MNRAS*, 261, 445.
12. Garnett, D.R. 1989, "The Abundance of Sulfur in Extragalactic H II Regions", *ApJ*, 345, 282.
13. Garnett, D.R. 1990, "Nitrogen in Irregular Galaxies", *ApJ*, 363, 142.
14. Hauschildt, M., Fairclough, J.H., Wright, G.S., & Walker, T.M. 1990, "Molecular Gas in IC 10", in *Submillimetre Astronomy*, edited by G.D. Watt and A.S. Webster (Kluwer, Dordrecht), p. 233.
15. Henkel, C., Wouterloot, J.G.A., & Bally, J. 1986, "H₂O and OH Maser Emission from Bright IRAS Galaxies", *A&A*, 155, 193.
16. Ho, L.C., Filippenko, A.V., & Sargent, W.L.W. 1995, "A Search for 'Dwarf' Seyfert Nuclei. II. An Optical Spectral Atlas of the Nuclei of Nearby Galaxies", *ApJS*, 98, 477.
17. Hodge, P., & Lee, M.G. 1990, "The H II Regions of IC 10", *PASP*, 102, 26.
18. Hodge, P., Wilcots, E., & Miller, B. 1994, "High Resolution H I Study of IC 10", *BAAS*, 26, 1436.
19. Huchtmeier, W. 1979, "The Giant H I Envelope of the Irregular Galaxy IC 10", *A&A*, 75, 170.
20. Hunter, D.A., & Gallagher, III, J.S. 1985, "Star-Forming Properties and Histories of Dwarf Irregular Galaxies: Down but not Out", *ApJS*, 58, 533.
21. Hunter, D.A., Hawley, W.N., and Gallagher, III, J.S. 1993, "A Survey for Extra-H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
22. Jacoby, G.H., & Lesser, M.P. 1981, "Distances to Nearby Galaxies Derived from Planetary Nebulae", *AJ*, 86, 185.

23. Karachentsev, I.D., & Tikhonov, N.A. 1993, "Photometric Distances to the Nearby Galaxies IC 10, IC 342, and UGCA 86, Visible Through the Milky Way", *A&AS*, 100, 227.
24. Klein, U., & Gräve, R. 1986, "Multi-frequency Radio Continuum Observations of Dwarf Irregular Galaxies", *A&A*, 161, 155.
25. Klein, U., Gräve, R., & Wielebinski, R. 1983, "A Survey of the Distribution of $\lambda 2.8$ cm Radio Continuum in Nearby Galaxies", *A&A*, 117, 332.
26. Lequeux, J., Peimbert, M., Rayo, J.F., Serrano, A., & Torres-Peimbert, S. 1979, "Chemical Composition and Evolution of Irregular and Blue Compact Galaxies", *A&A*, 80, 155.
27. Madden, S.C., Poglitsch, A., Geis, N., Stacey, G.J., & Townes, C.H. 1997, "[C II] 158 Micron Observations of IC 10: Evidence for Hidden Molecular Hydrogen in Irregular Galaxies", *ApJ*, 483, 200.
28. Massey, P., & Armandroff, T.E. 1992, "IC 10: A 'Poor Cousin' Rich in Wolf-Rayet Stars", *AJ*, 103, 1159.
29. Massey, P., & Armandroff, T.E. 1995, "The Massive Star Content, Reddening, and Distance of the Nearby Irregular Galaxy IC 10", *AJ*, 109, 2470.
30. Mayall, N.U. 1935, "An Extra-Galactic Object 3° from the Plane of the Galaxy", *PASP*, 47, 317.
31. Mayall, N.U. 1941, "The Radial Velocity of IC 10", *PASP* 53, 122.
32. Ohta, K., Sasaki, M., & Saitō, M. 1988, "CO Clouds in the Dwarf Irregular Galaxy IC 10", *PASJ*, 40, 653.
33. Ohta, K., Sasaki, M., Yamada, T., Saitō, M., & Nakai, N. 1992, "Aperture Synthesis Observations of Molecular Clouds in the Dwarf Irregular Galaxy IC 10", *PASJ*, 44, 585.
34. Roberts, M.S. 1962, "A Study of Neutral Hydrogen in IC 10", *AJ* 67, 431.
35. Rowan-Robinson, M., Phillips, T.G., & White, G. 1980, "A Survey of Nearby Galaxies for CO", *A&A*, 82, 381.
36. Saha, A., Hoessel, J.J., Krist, J., & Danielson, G.E. 1996, "Variable Stars in the Dwarf Galaxy IC 10", *AJ*, 111, 197.
37. Saitō, M., Sasaki, M., Ohta, K., & Yamada, T. 1992, "An H-Alpha Velocity Field in the Irregular Galaxy IC 10", *PASJ*, 44, 593.
38. Shostak, G.S. 1974, "Aperture Synthesis Study of H I in the Galaxy IC 10", *A&A*, 31, 97.
39. Shostak, G.S., & Allen, R.J. 1980, "Accurate H I Profiles of Several Nearby Galaxies", *A&A*, 81, 167.
40. Shostak, G.S., & Skillman, E.D. 1989, "Neutral Hydrogen Observations of the Irregular Galaxy IC 10", *A&A*, 214, 33.
41. Shostak, G.S., & van Woerden, H. 1983, "H I Observations of the Irregular Galaxy IC 10", in *Internal Kinematics and Dynamics of Galaxies*, IAU Symposium No. 100, edited by E. Athanassoula (Reidel, Dordrecht), p. 33.
42. Skillman, E.D. 1988, "A Nonthermal Superbubble in the Irregular Galaxy IC 10", in *Supernova Remnants and the Interstellar Medium*, IAU Colloquium No. 101, edited by R.S. Roger and T.L. Landecker (Cambridge University Press, Cambridge), p. 465.
43. Thronson, Jr., H.A., Hunter, D.A., Casey, S., & Harper, D.A. 1990, "Sub-Millimeter Continuum Emission from Galaxies: Star Formation and the Interstellar Medium in the Local Group Dwarf IC 10", *ApJ*, 355, 94.
44. Wilson, C.D. 1995, "The Metallicity Dependence of the CO-to-H₂ Conversion Factor from Observations of Local Group Galaxies", *ApJ*, 448, L97.

45. Wilson, C.D., & Reid, I.N. 1991, "Giant Molecular Clouds and the CO $\rightarrow$ H₂ Conversion Factor in IC 10", *ApJ*, 366, L11.
46. Wilson, C.D., Welch, D.L., Reid, I.N., Saha, A., & Hoessel, J. 1996, "The Distance to IC 10 from Near-Infrared Observations of Cepheids", *AJ*, 111, 1106.
47. Yang, H., & Skillman, E.D. 1993, "A Nonthermal Superbubble in the Irregular Galaxy IC 10", *AJ* 106, 1448.

IC 1613

Alternate name(s): DDO 8

Right Ascension (2000): 01 h 04m 54s

Declination (2000): 02d 08.0m

Type: dIrr

Apparent magnitude (V): 9.59

Color (B-V): 0.55

(U-B): -0.25

(V-R):

Color Excess, E(B-V): 0.03

Absolute magnitude (M_V): -14.7

Distance (kpc): 700

Radial velocity (solar, km/sec): -234

Objects Identified On the Atlas:

Globular clusters: none

Source

Open clusters: 43 (candidates, mostly doubtful); designation: C

Source: [25]

OB associations: 20; designation: A

Source: [25]

Variable stars: 59; designation: V

Source: [56]

Carbon stars: none

Source:

HII regions: 77; designation: Arabic numerals

Source: [28]

Dust clouds: 11; designation: D

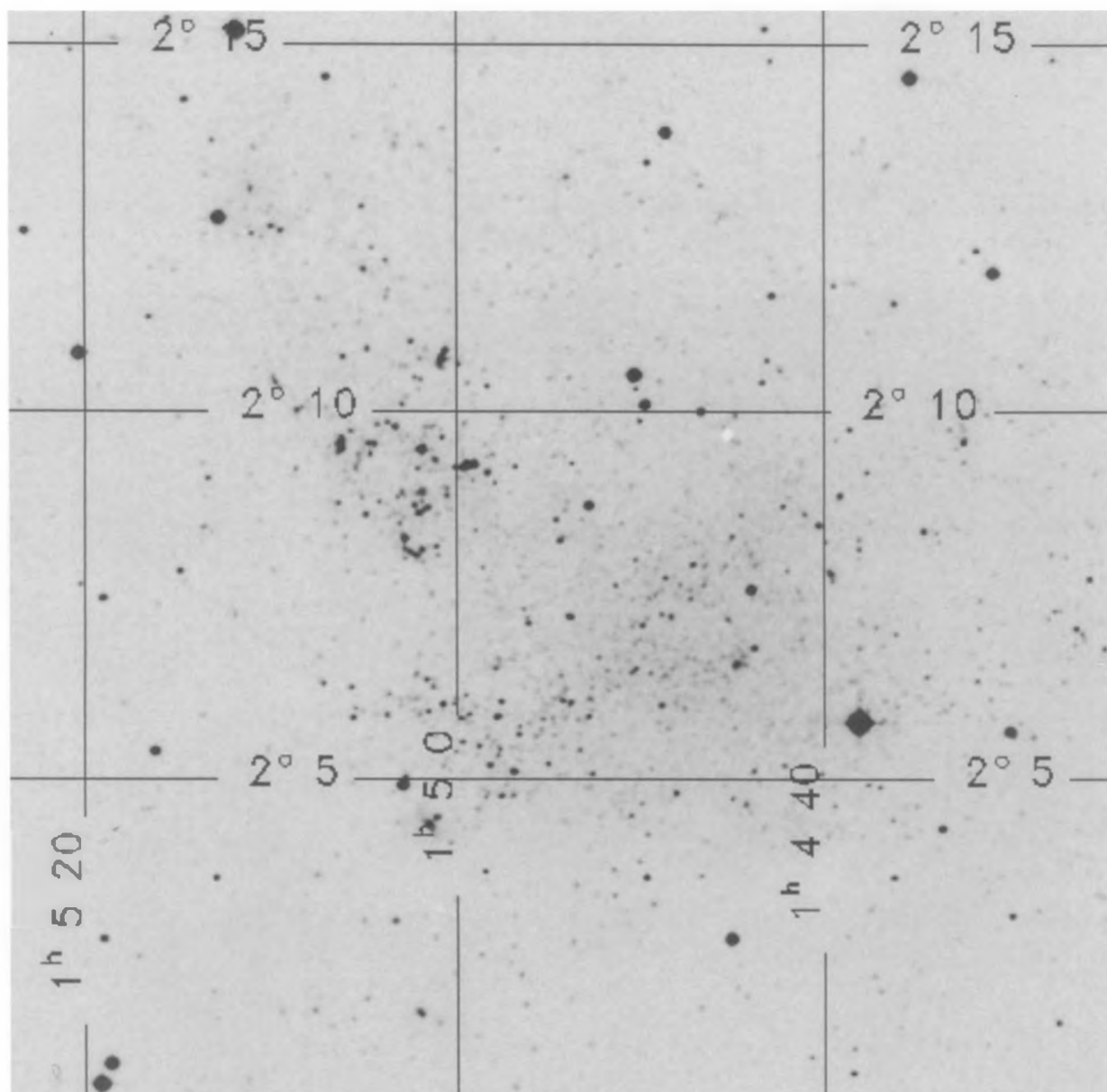
Source: [25]

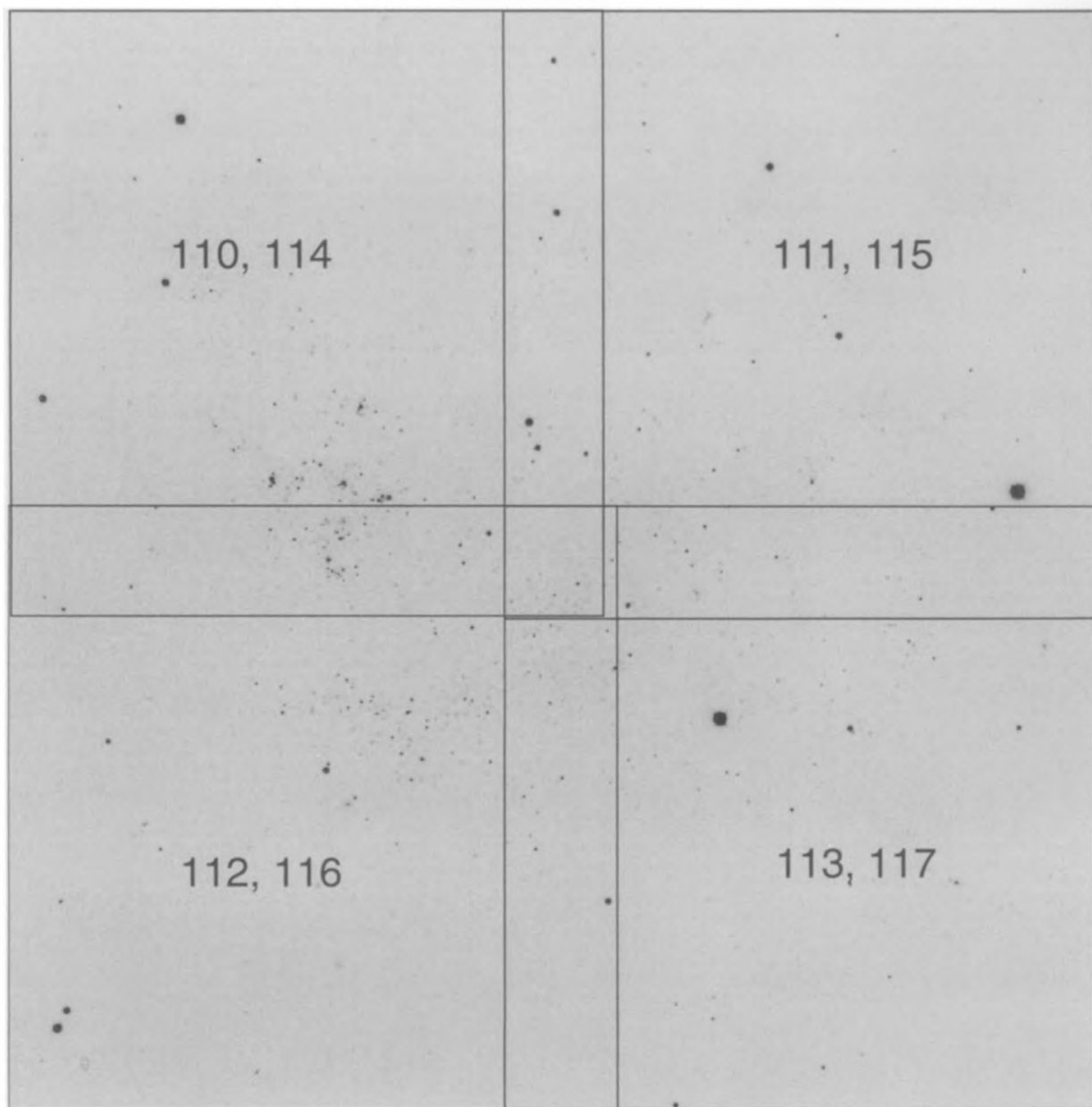
Wolf-Rayet Stars: 8; designation: WR

Source: [3]

IC 1613

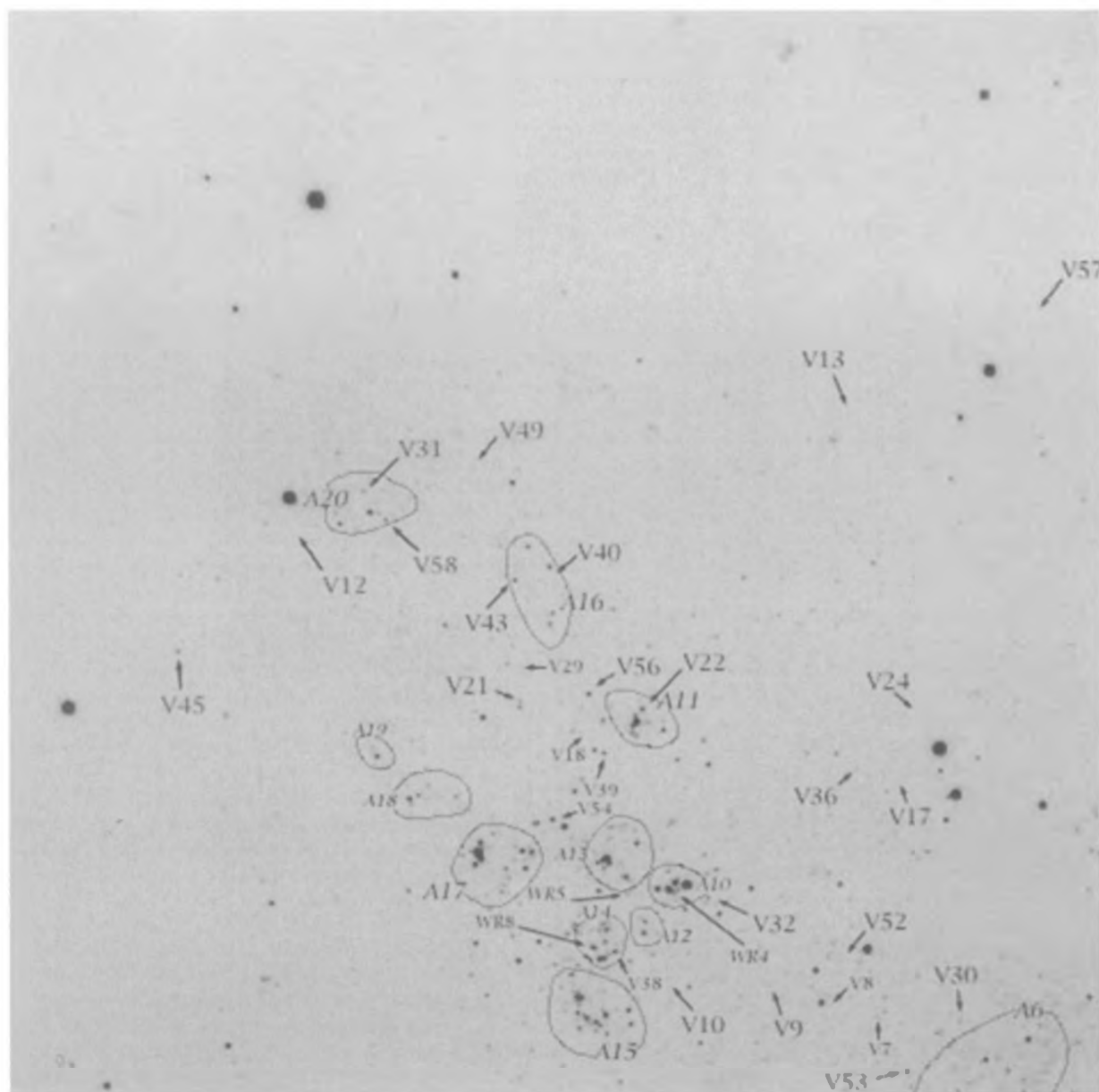
Chart 108



IC 1613**Chart 109**

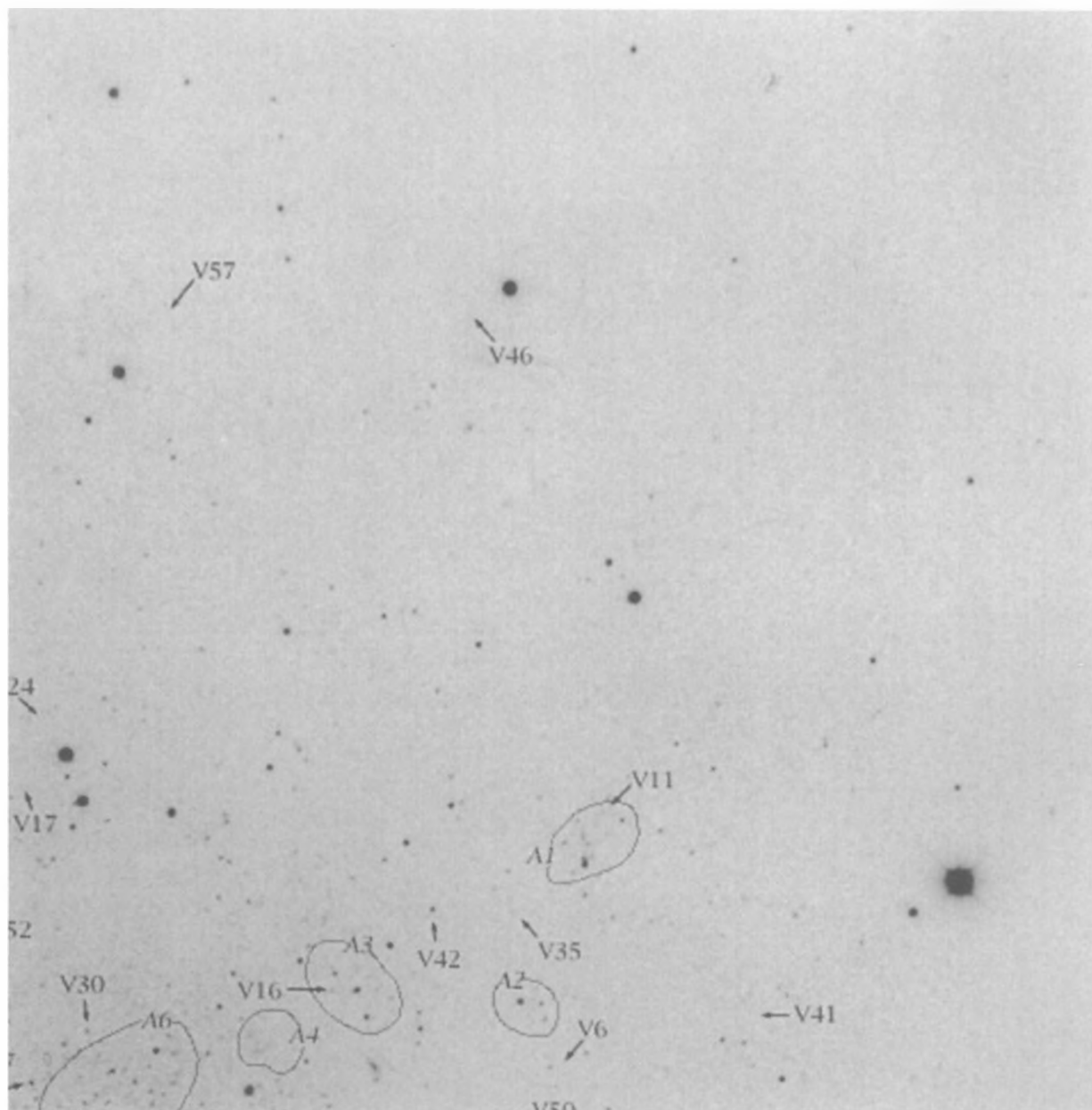
IC 1613

Chart 110



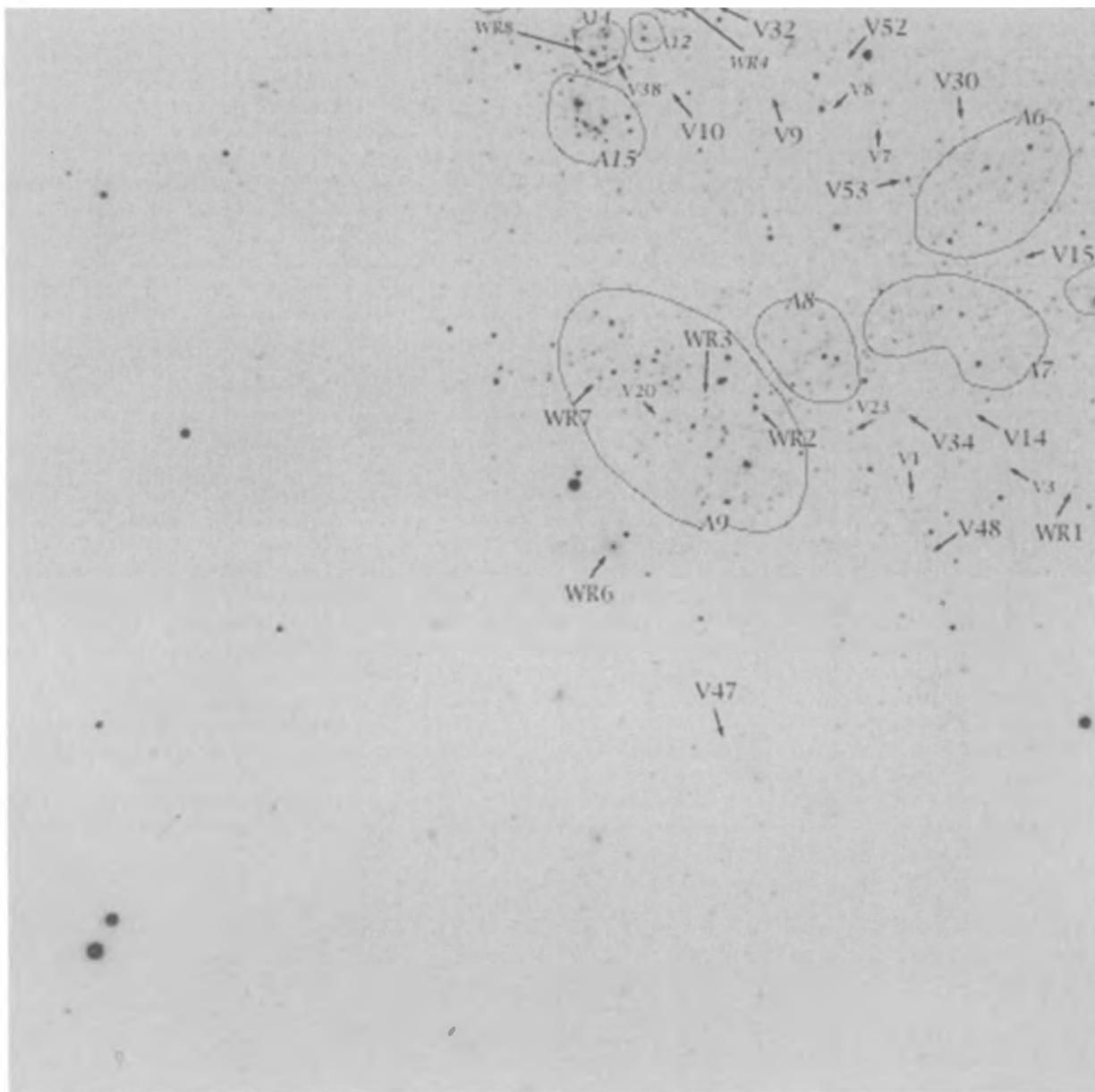
IC 1613

Chart 111



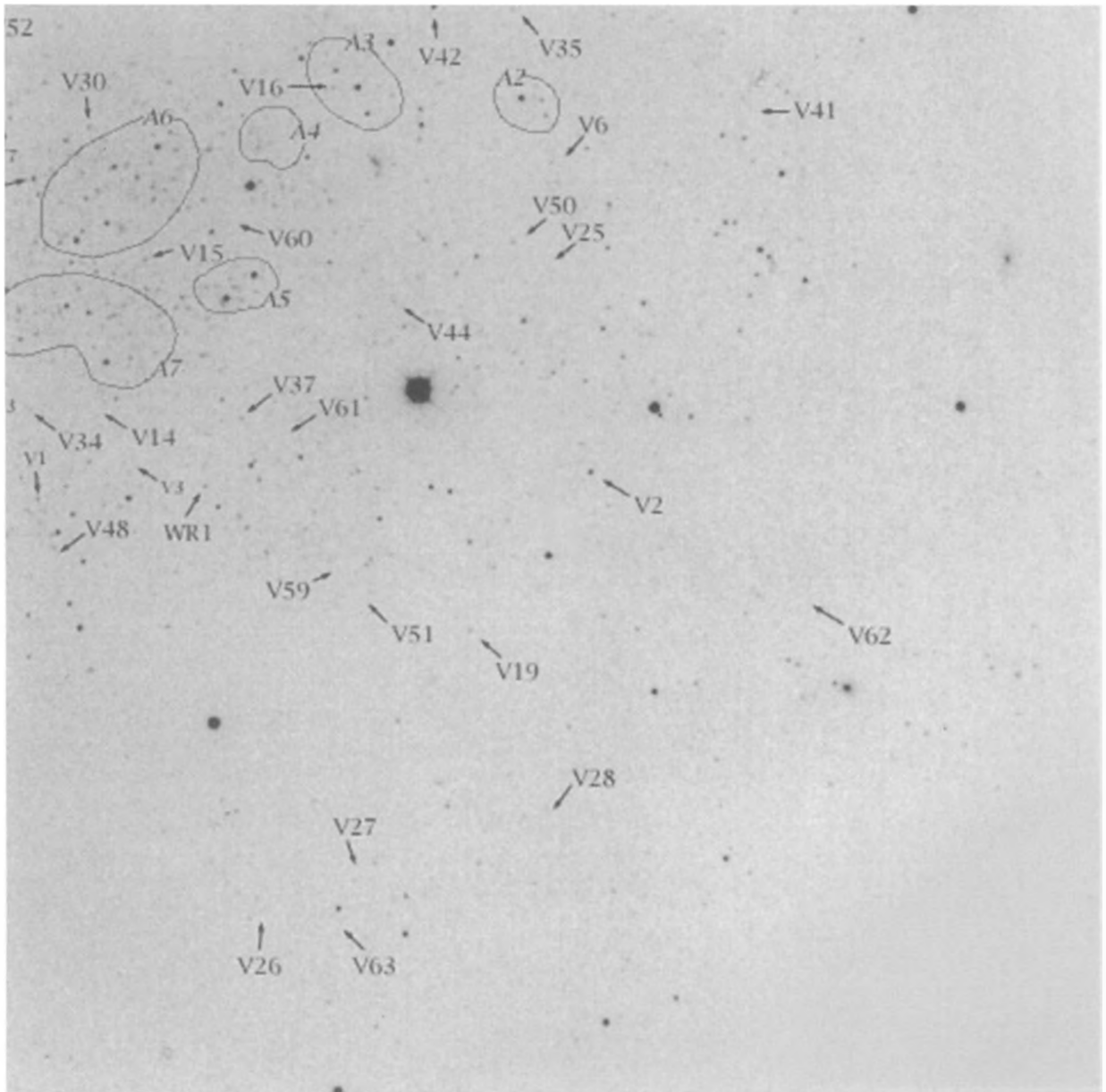
IC 1613

Chart 112



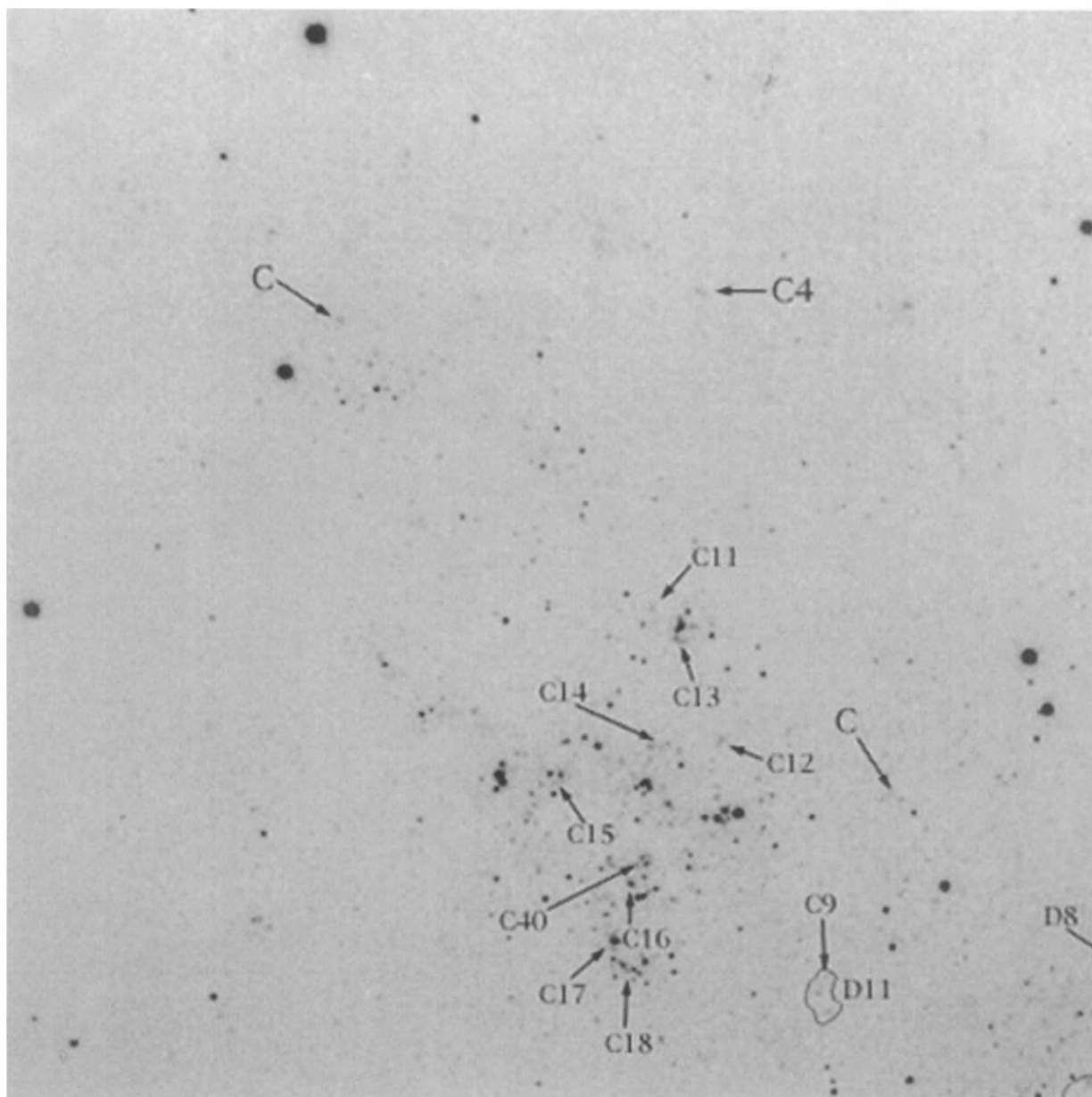
IC 1613

Chart 113



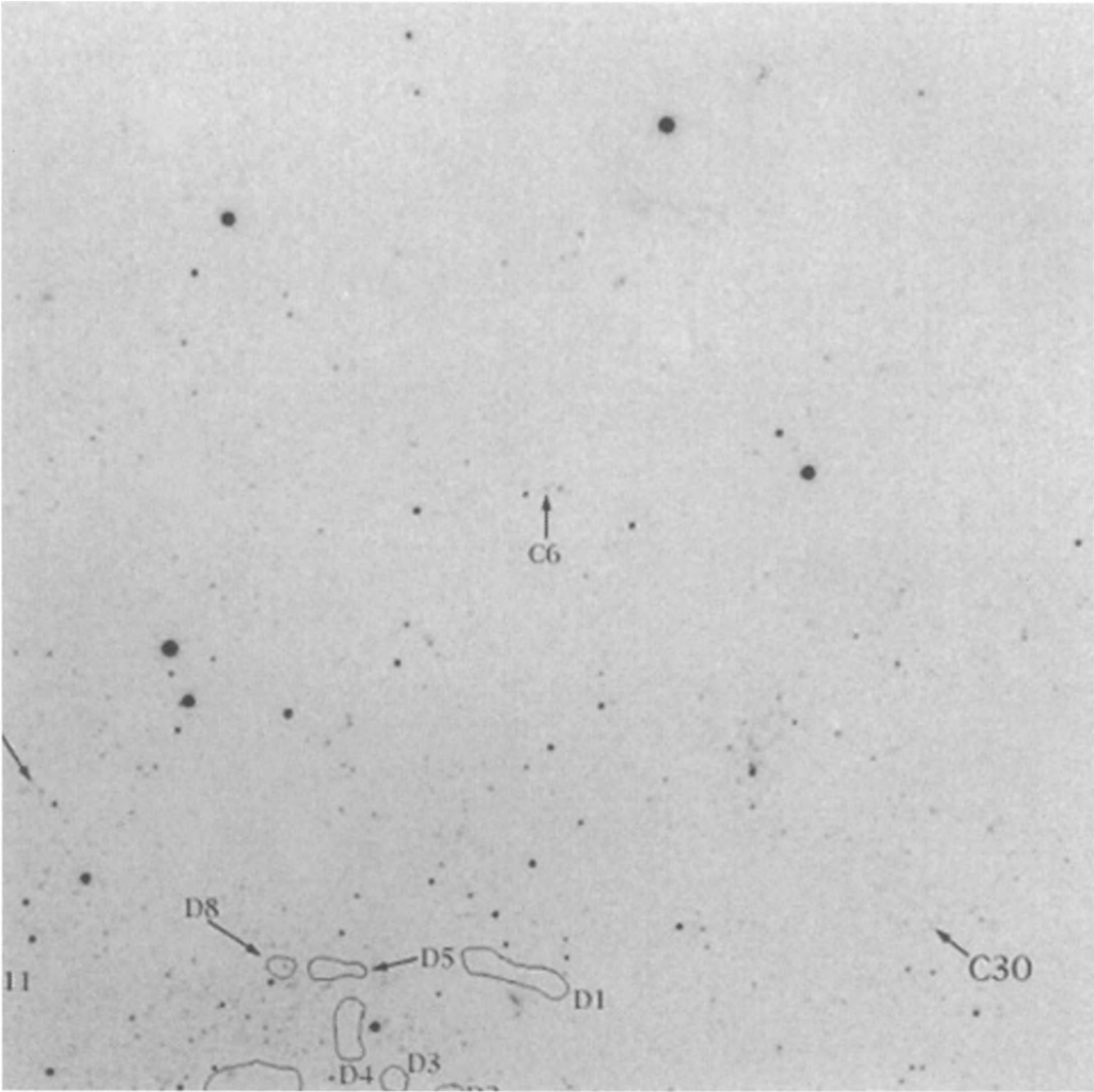
IC 1613

Chart 114



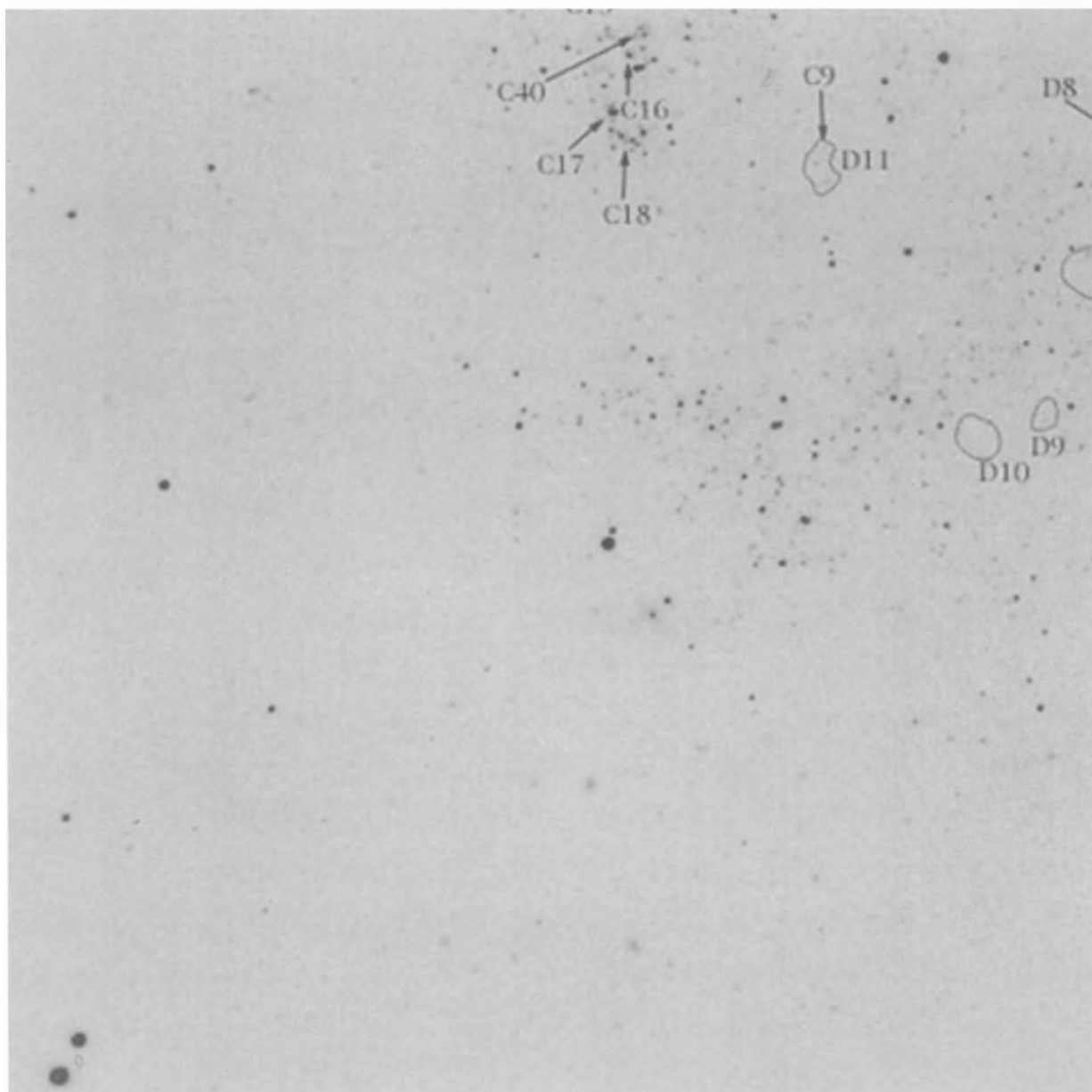
IC 1613

Chart 115



IC 1613

Chart 116



IC 1613

Chart 117

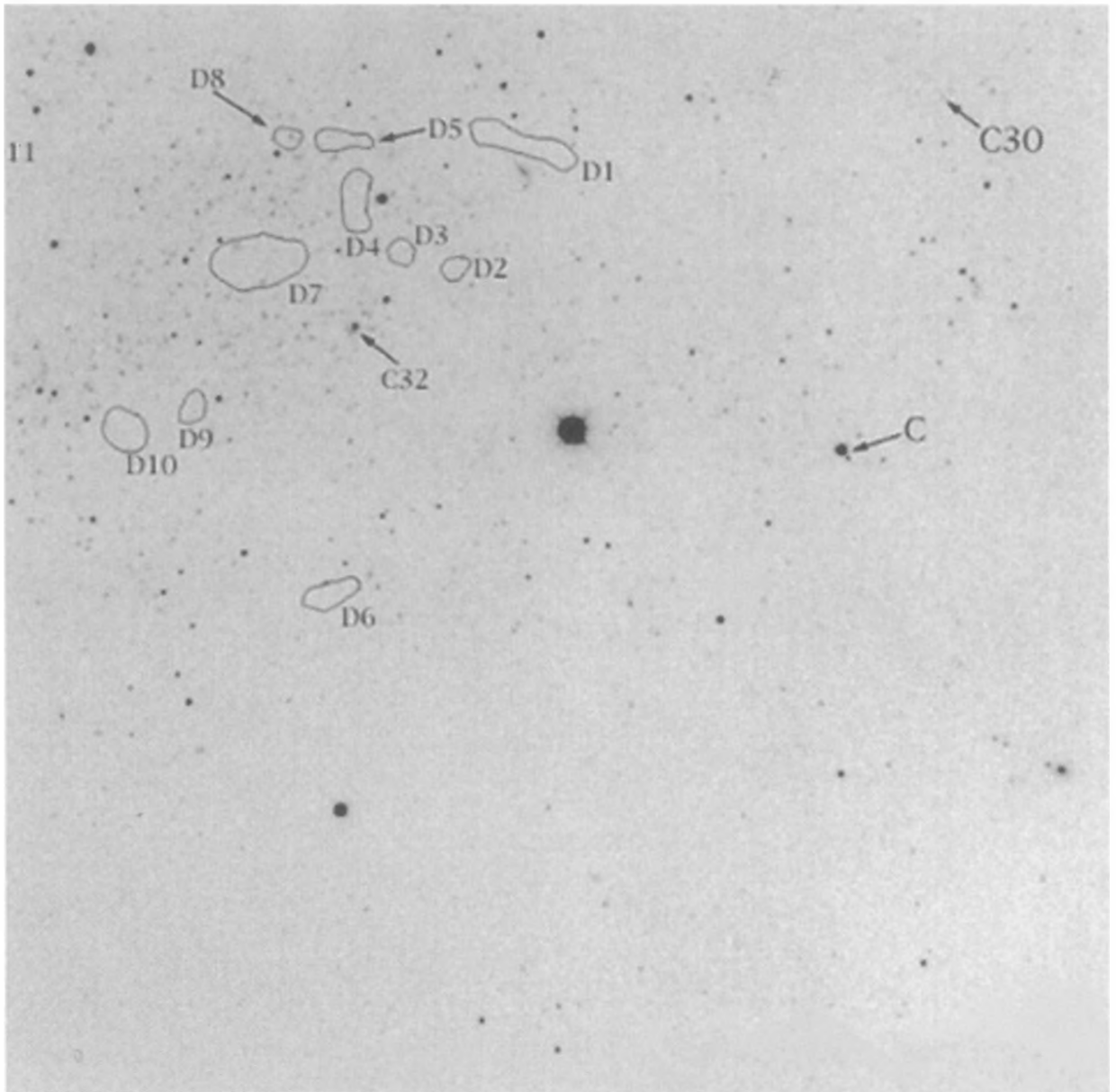


Table 5. IC 1613 Emission Regions^a

ID	Sandage no.	Chart
1	--	128
2	--	134
3	--	128
4	--	128
5	S 1	128
6	--	134
7	--	119
8	--	134
9	--	122,128
10	--	131
11	--	127
12	--	127
13	S 2	131
13a	--	131
13b	--	131
13c	--	131
14	--	130
15	--	126
16	--	133
17	--	130,133
18	--	130
19	--	126
20	--	126
21	--	126
22	--	126
23	--	125
24	--	125
25	--	125
26	--	121
27	--	125
28		125
29	S 12	125
30		125

31	S 18	121
32	S 19	121,126
33	--	125
34	--	125
35	--	125
36	S 6	125
37	S 3	132
37a	--	132
37b	--	132
37c	--	132
37d	--	132
37e	--	132
37f	--	132
37g	--	132
38	--	125
39	--	125
40	S 7	125
40a	--	124
40b	--	124
41	--	125
42	--	129
43	--	129
44	--	121
45	S 17	125
46		125
46a	--	124
46b	--	124
46c	--	124
46d	S 15	124
46e	S 15	124
46f	S 16	124
46g	--	124
47	--	125
48	--	125
49	S 8	124,125
50	--	125

51	--	125
52	S 5	125
53	S 5	125
54		132
55	S 14	125
56	--	125
57	--	125
58	--	125
59	S 4	129
60	--	125
61	--	125
62	--	121
63	--	125
64	--	125
65	--	129
66	--	121
67	S 10	125
67a	--	124
67b	--	124
67c	--	124
67d	S 13	124
68	--	125
69	--	125
70	S 11	123
71	--	120
72	--	123
73	--	123
74	--	120
75	--	120
76	--	120
77	--	133

^aDesignations from reference 28; Sandage numbers from reference 56.

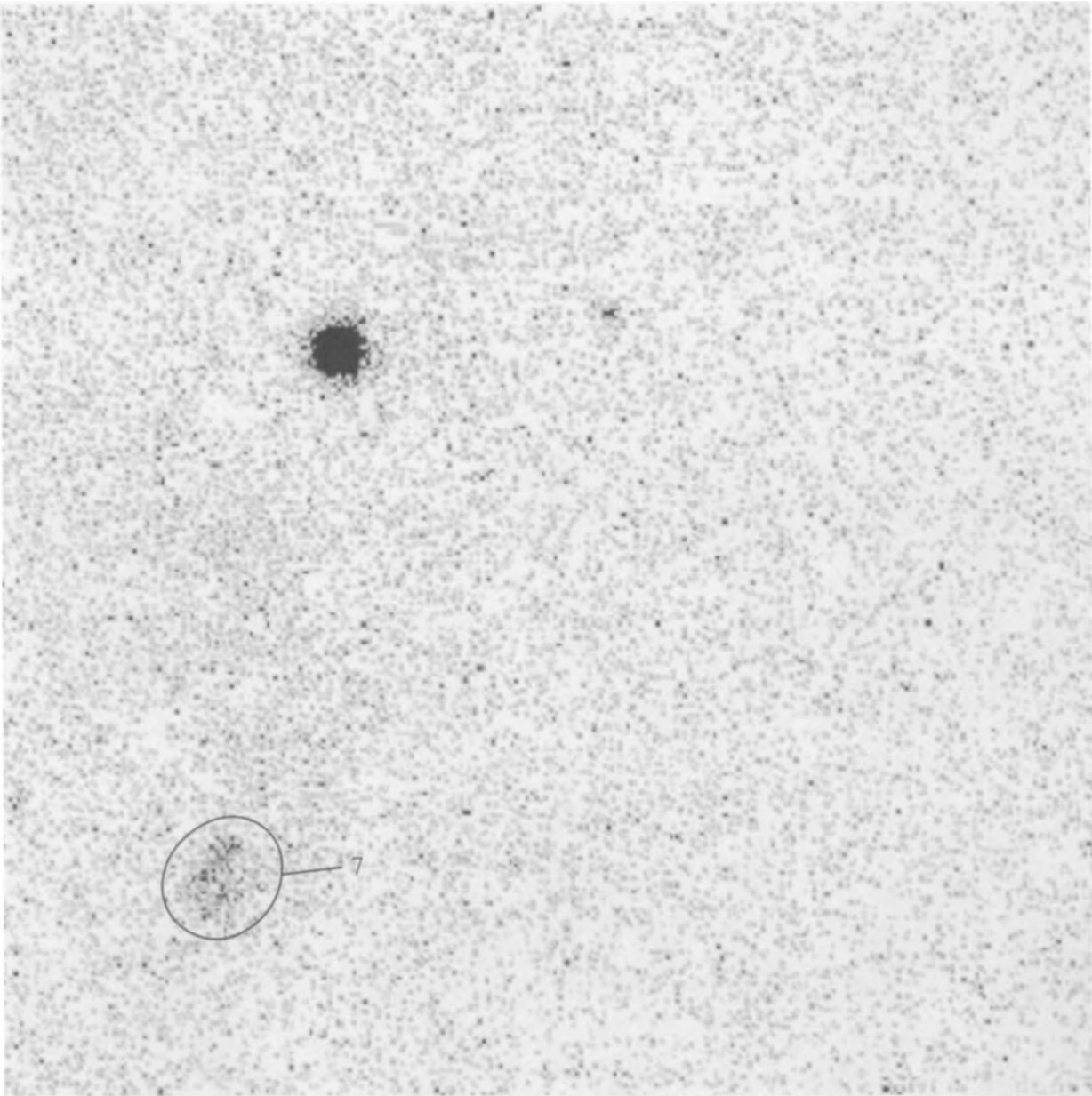
IC 1613

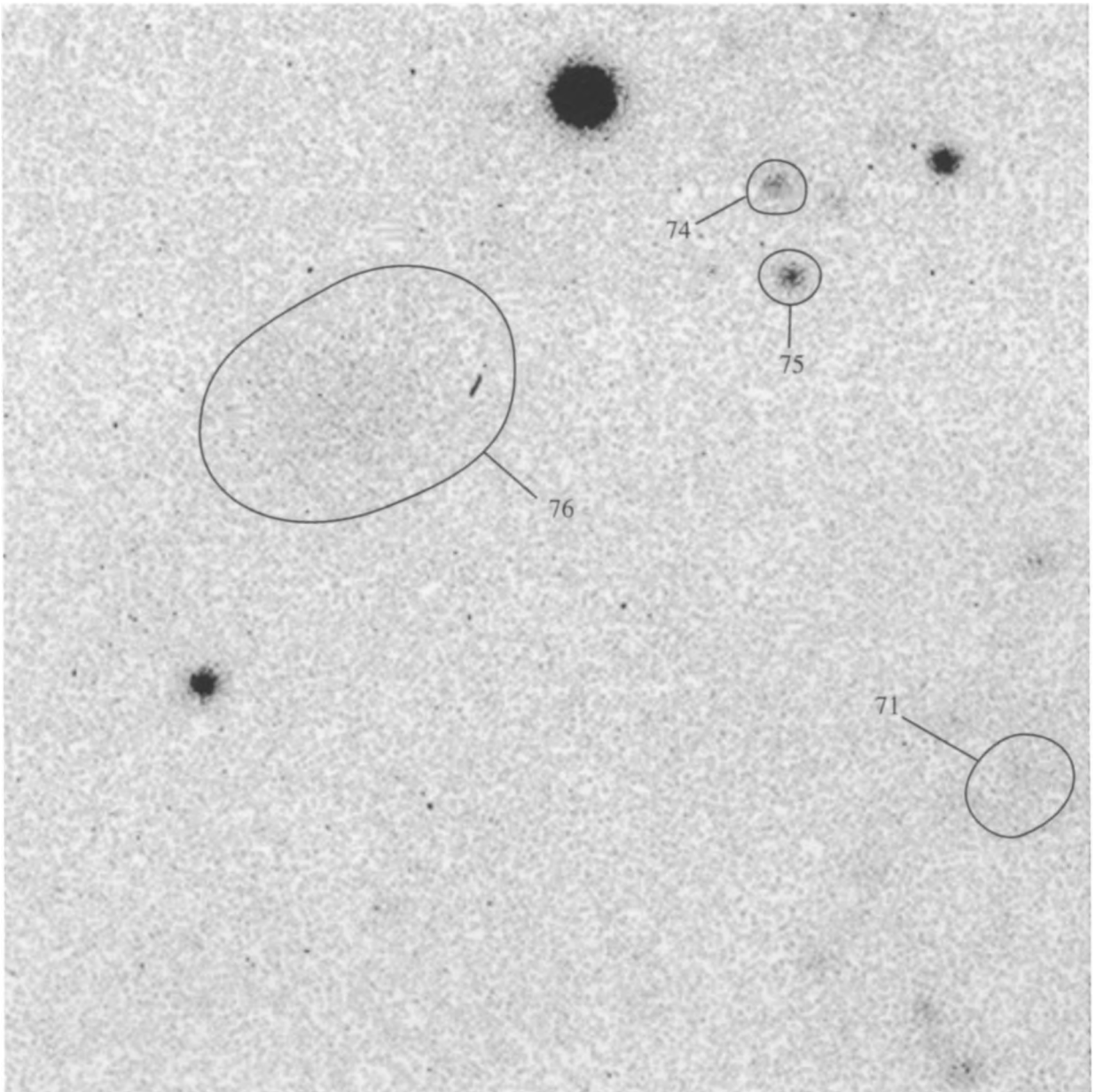
Chart 118

				119
120	121			122
123	124, 125	126	127	128
		129	130	131
		132	133	134

IC 1613

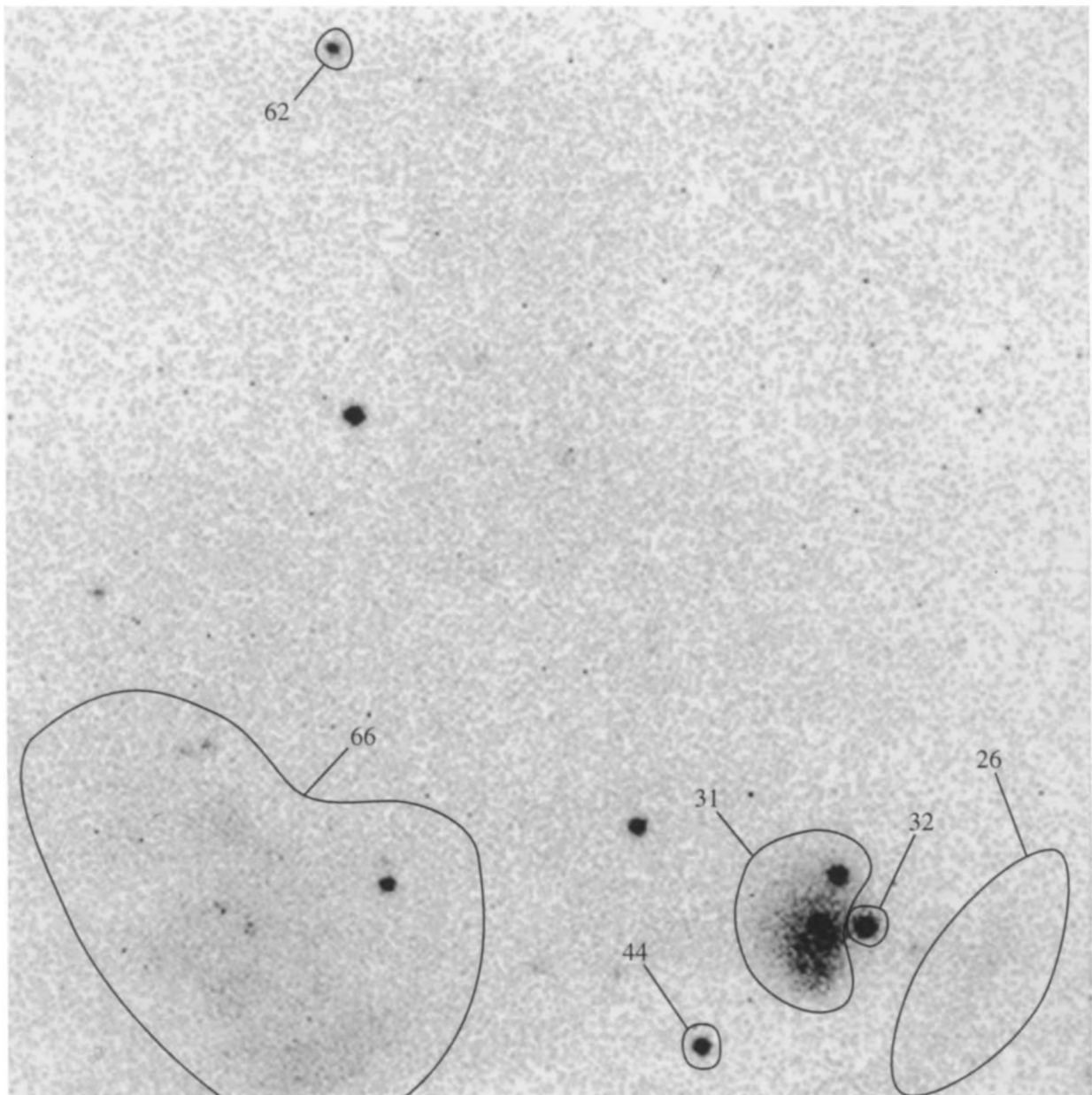
Chart 119



IC 1613**Chart 120**

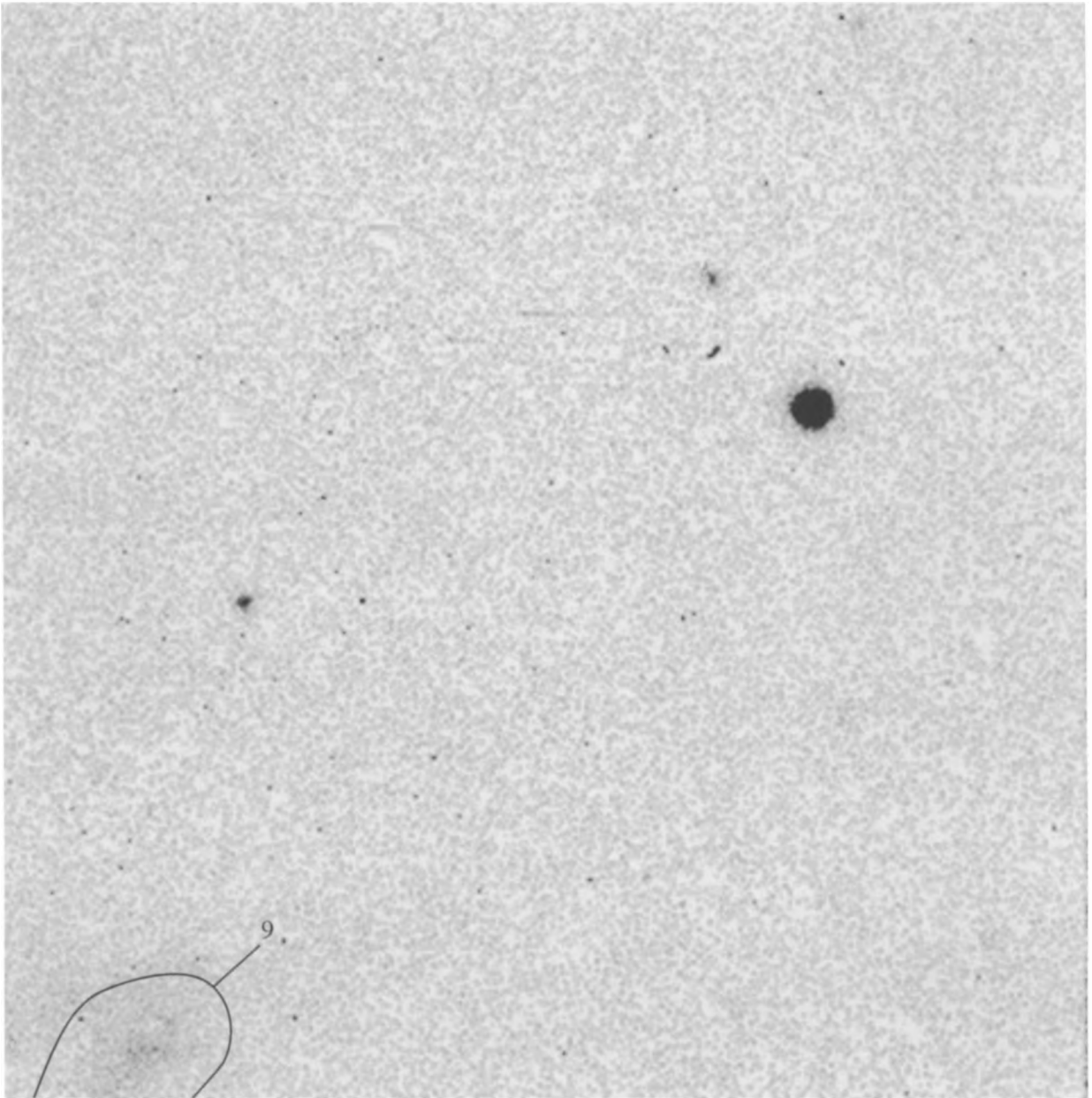
IC 1613

Chart 121



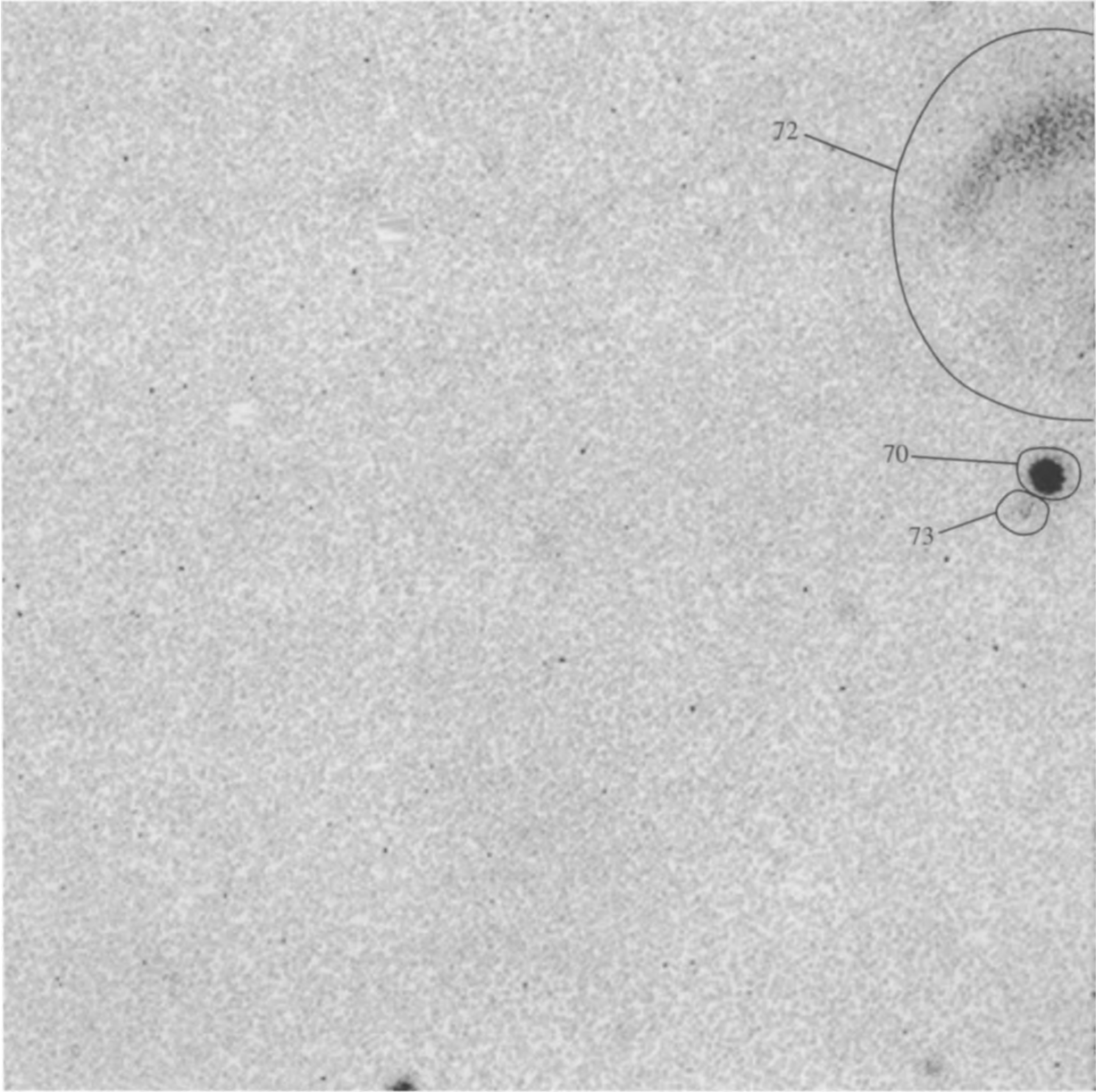
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Chart 122



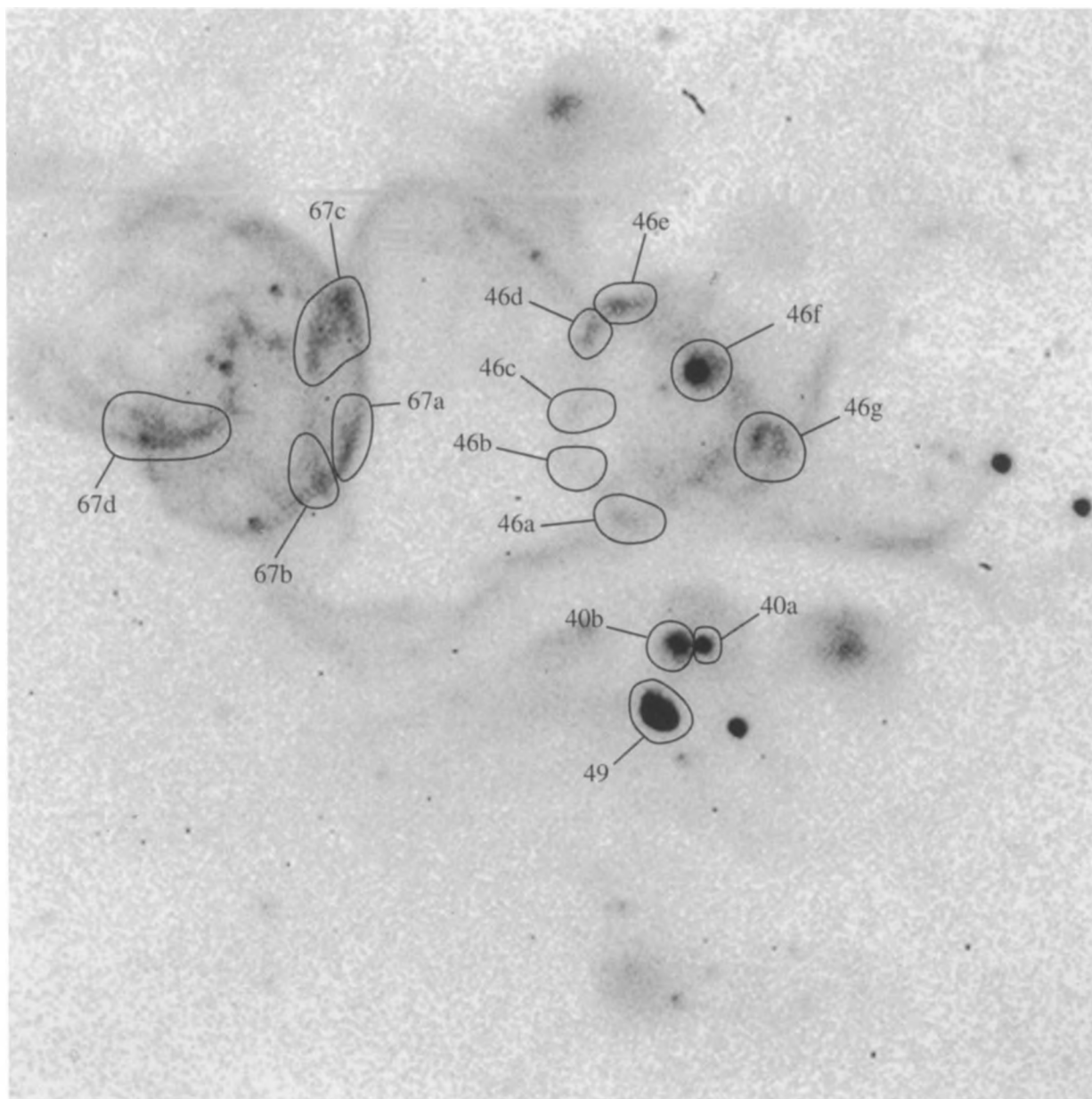
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Chart 123



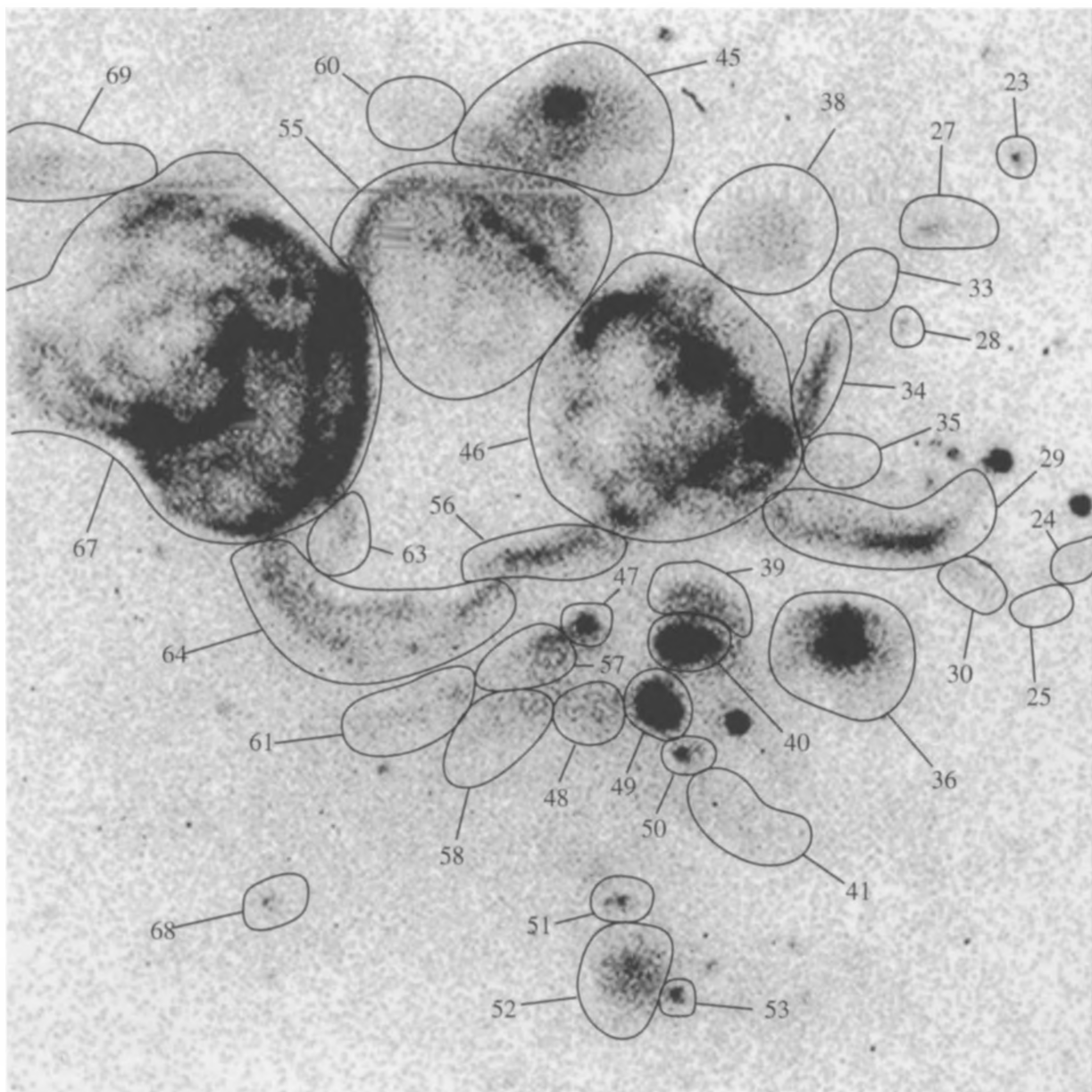
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Chart 124



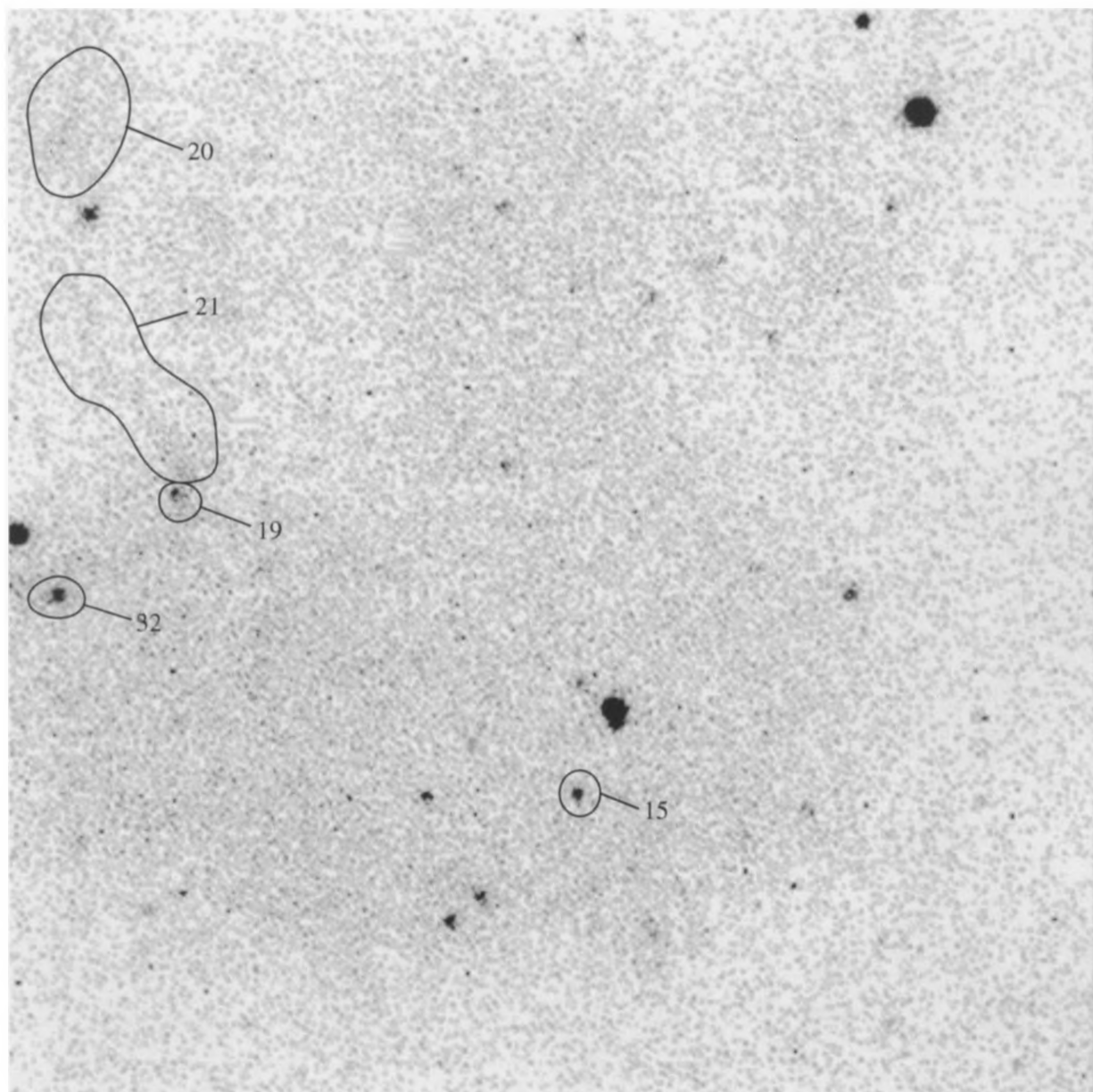
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Chart 125



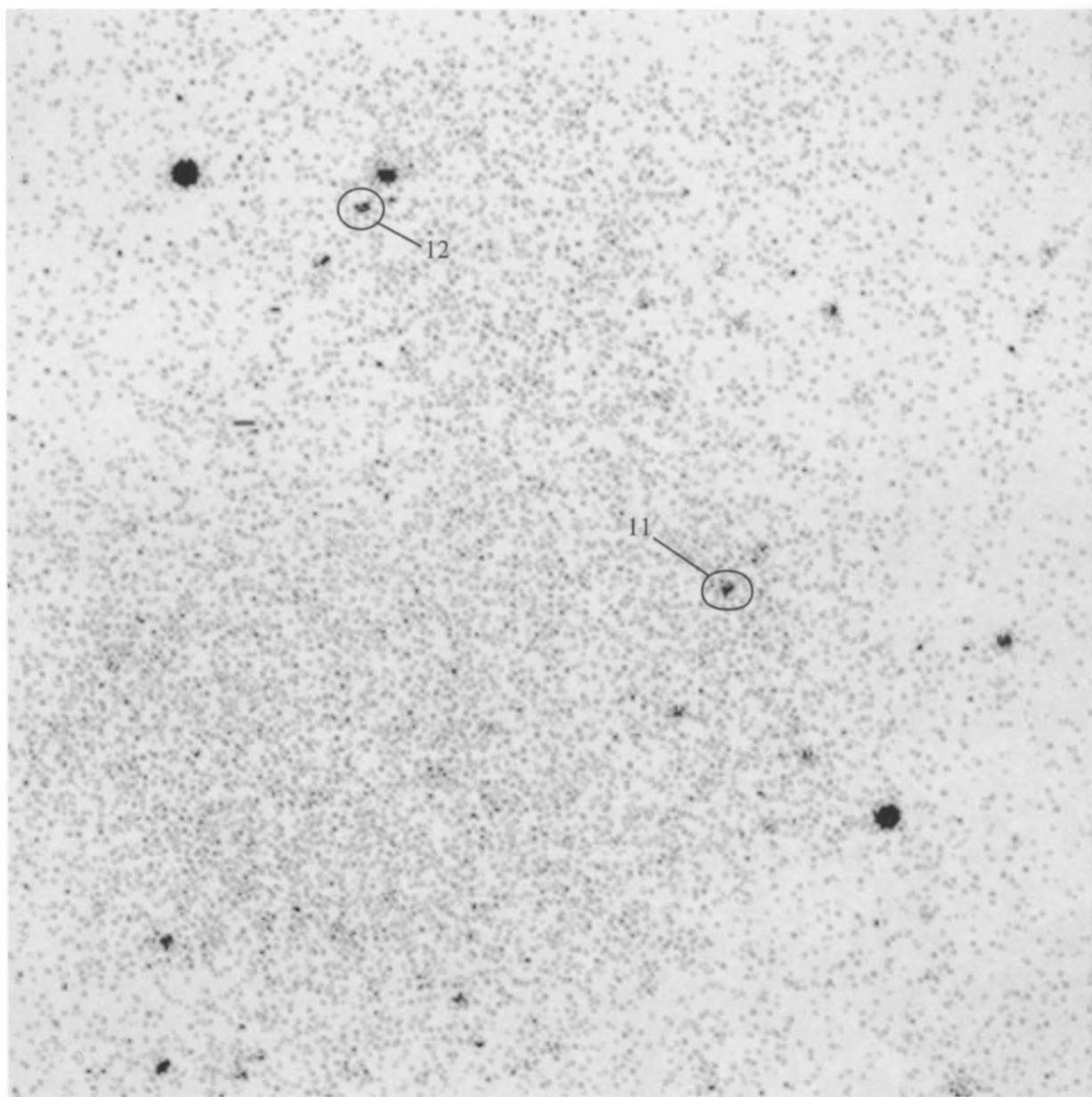
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Chart 126



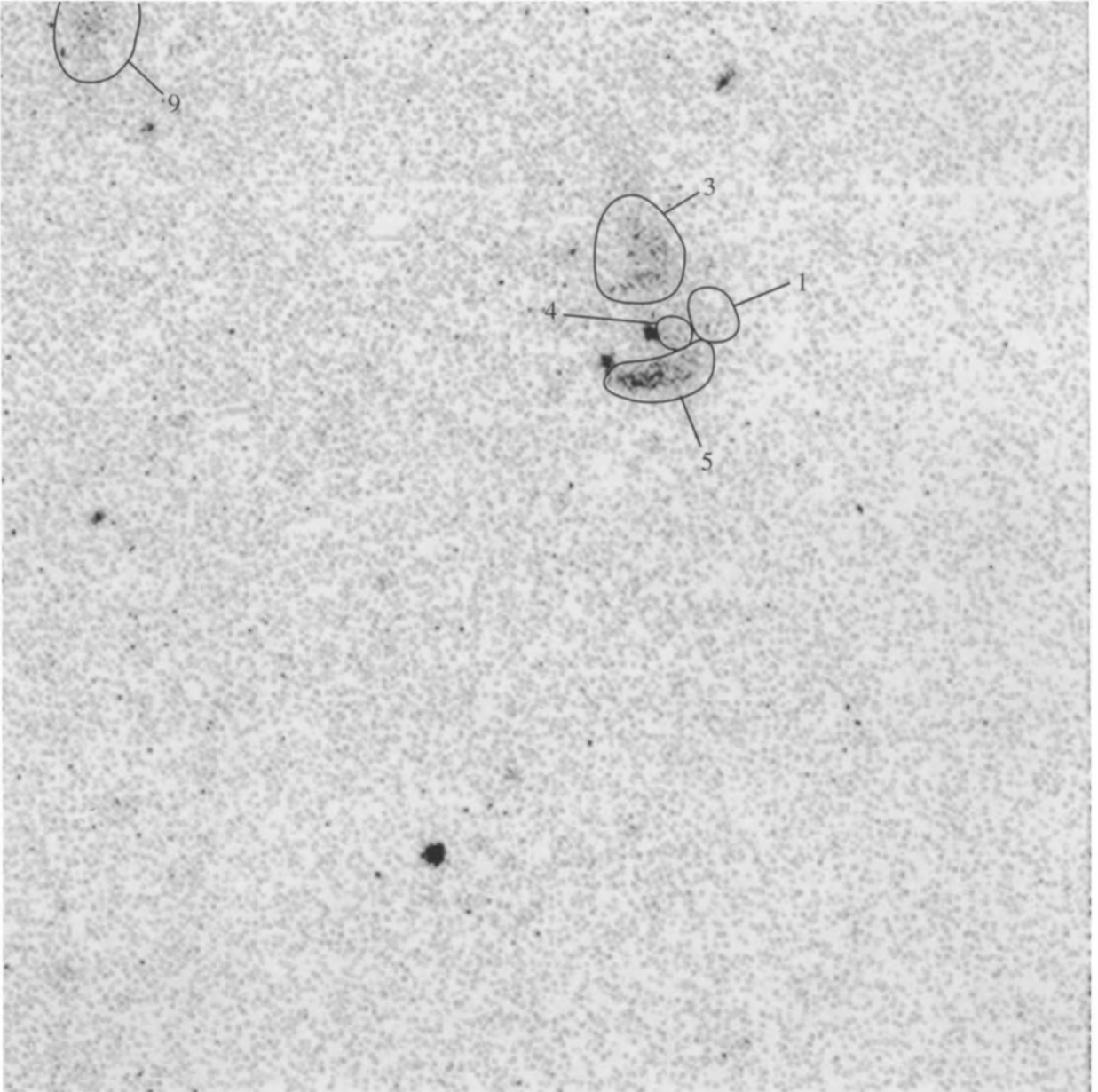
IC 1613

Chart 127



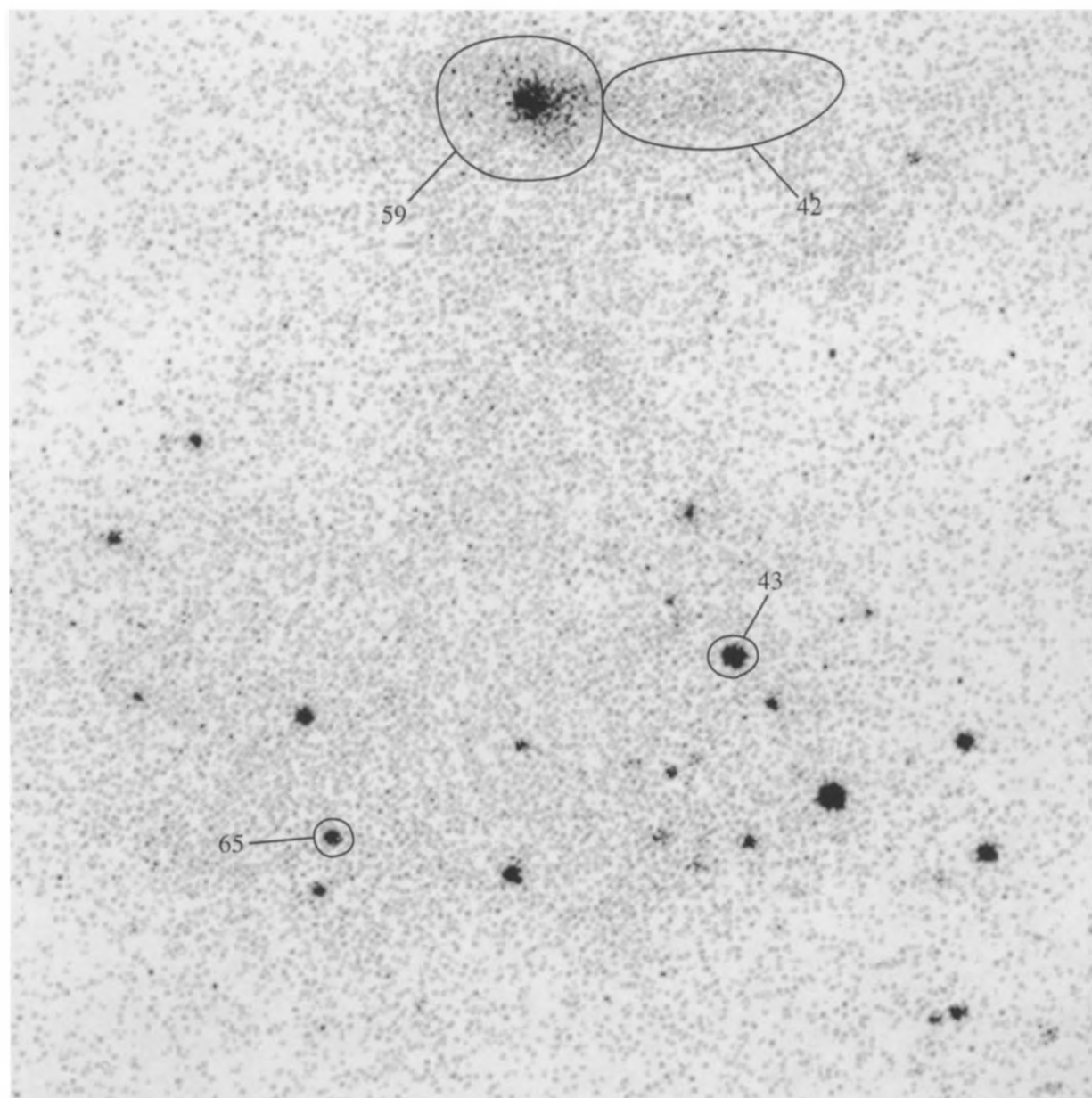
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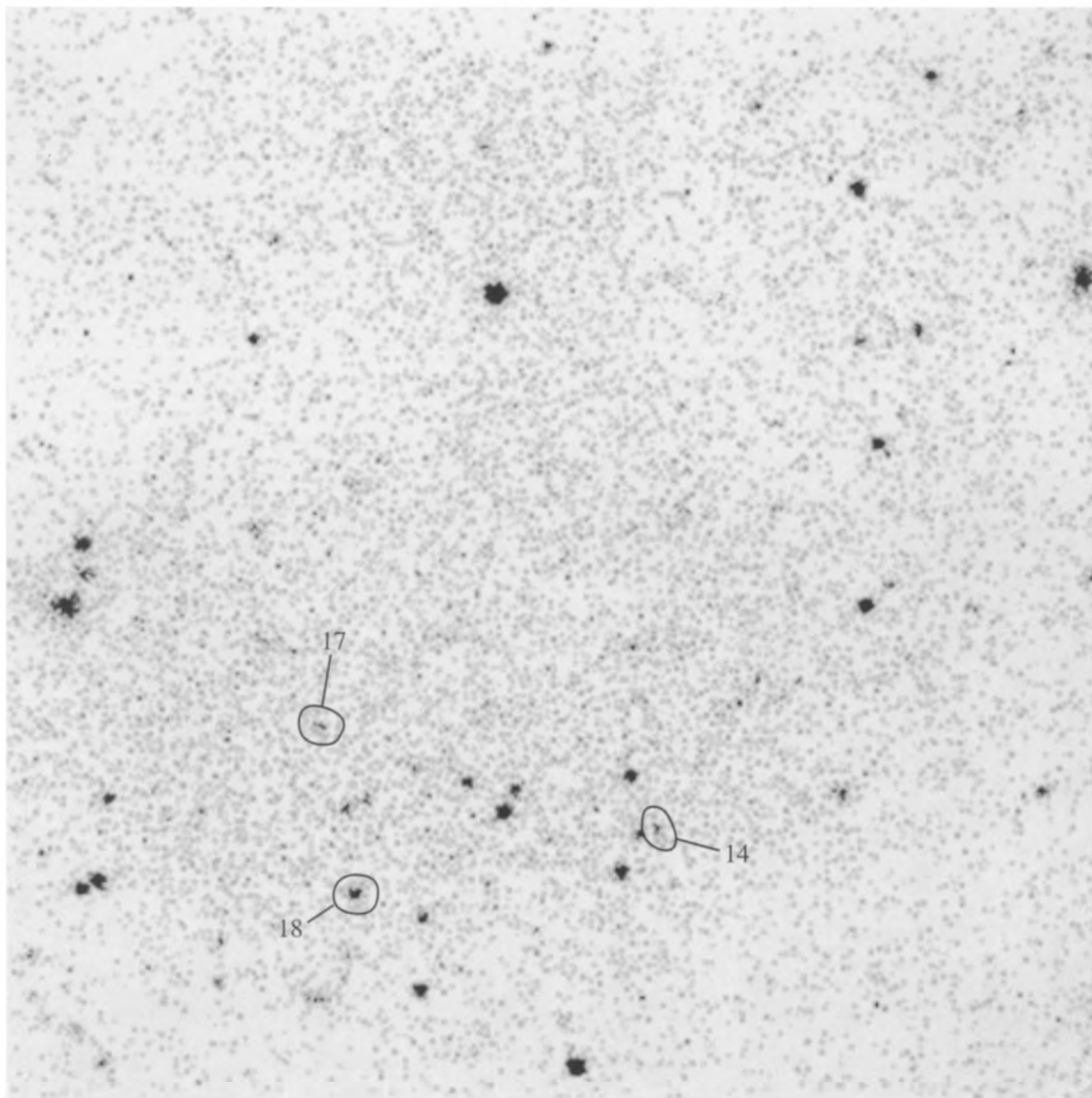
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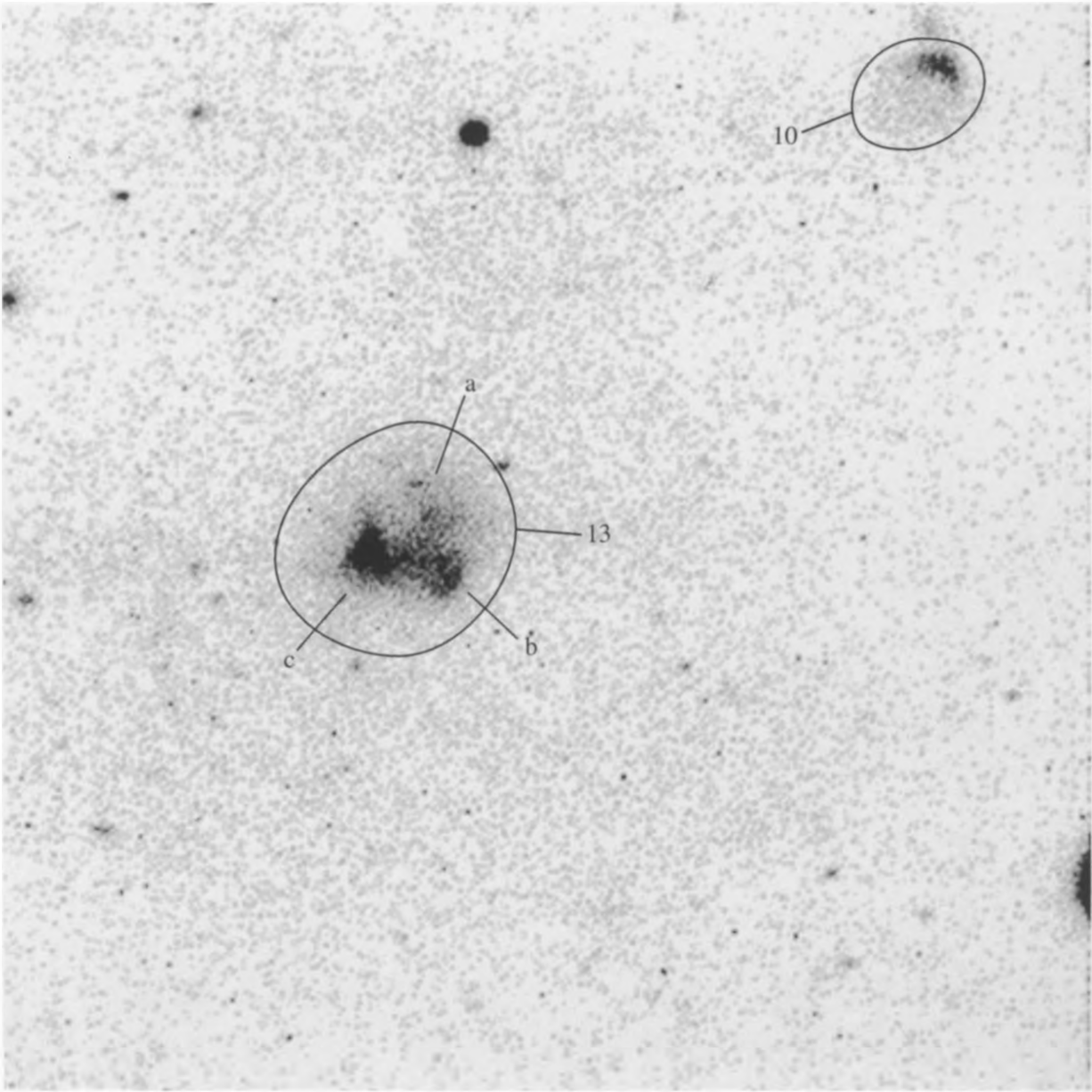
Chart 129



IC 1613**Chart 130**

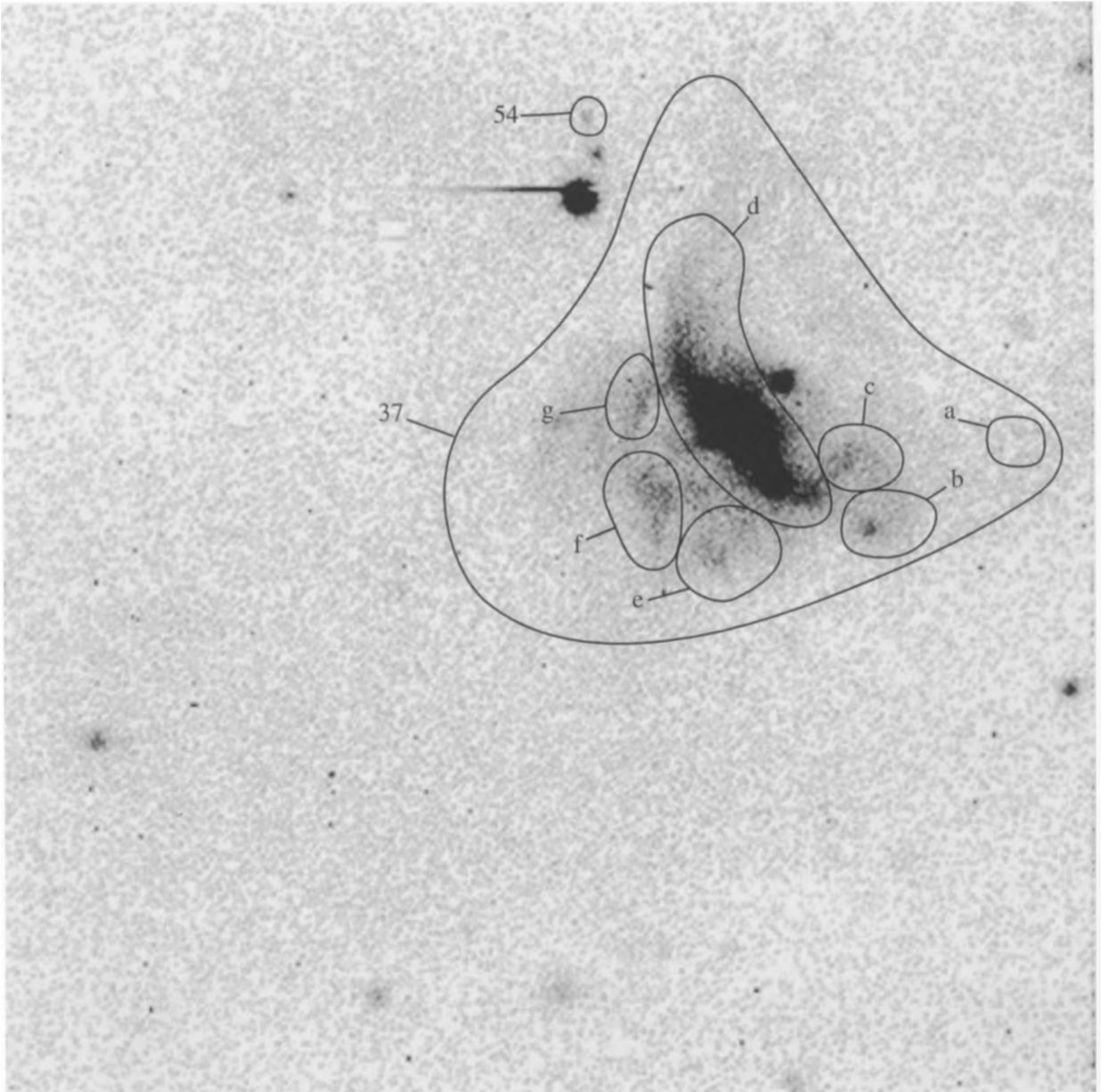
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Chart 131



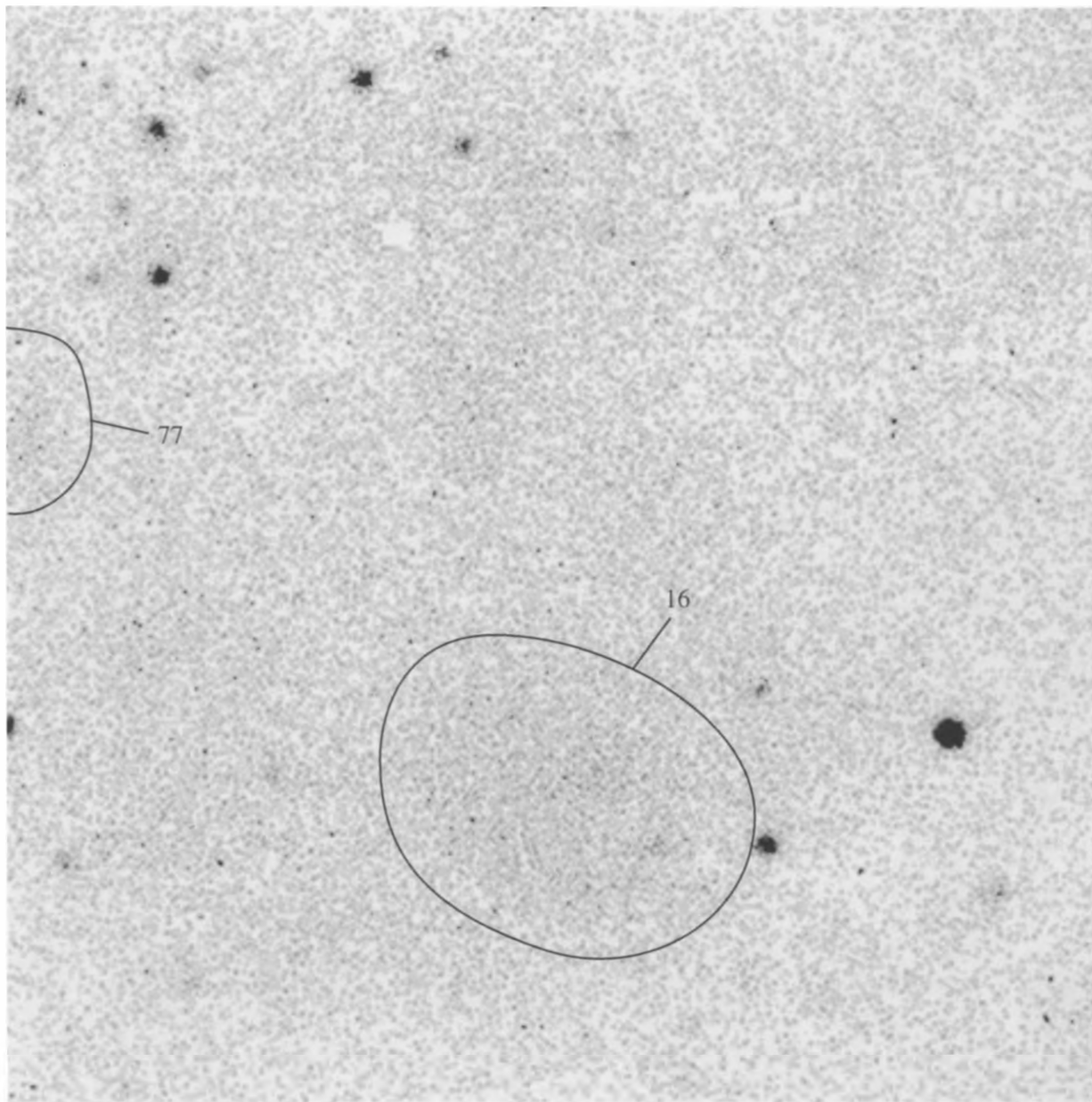
IC 1613

Chart 132



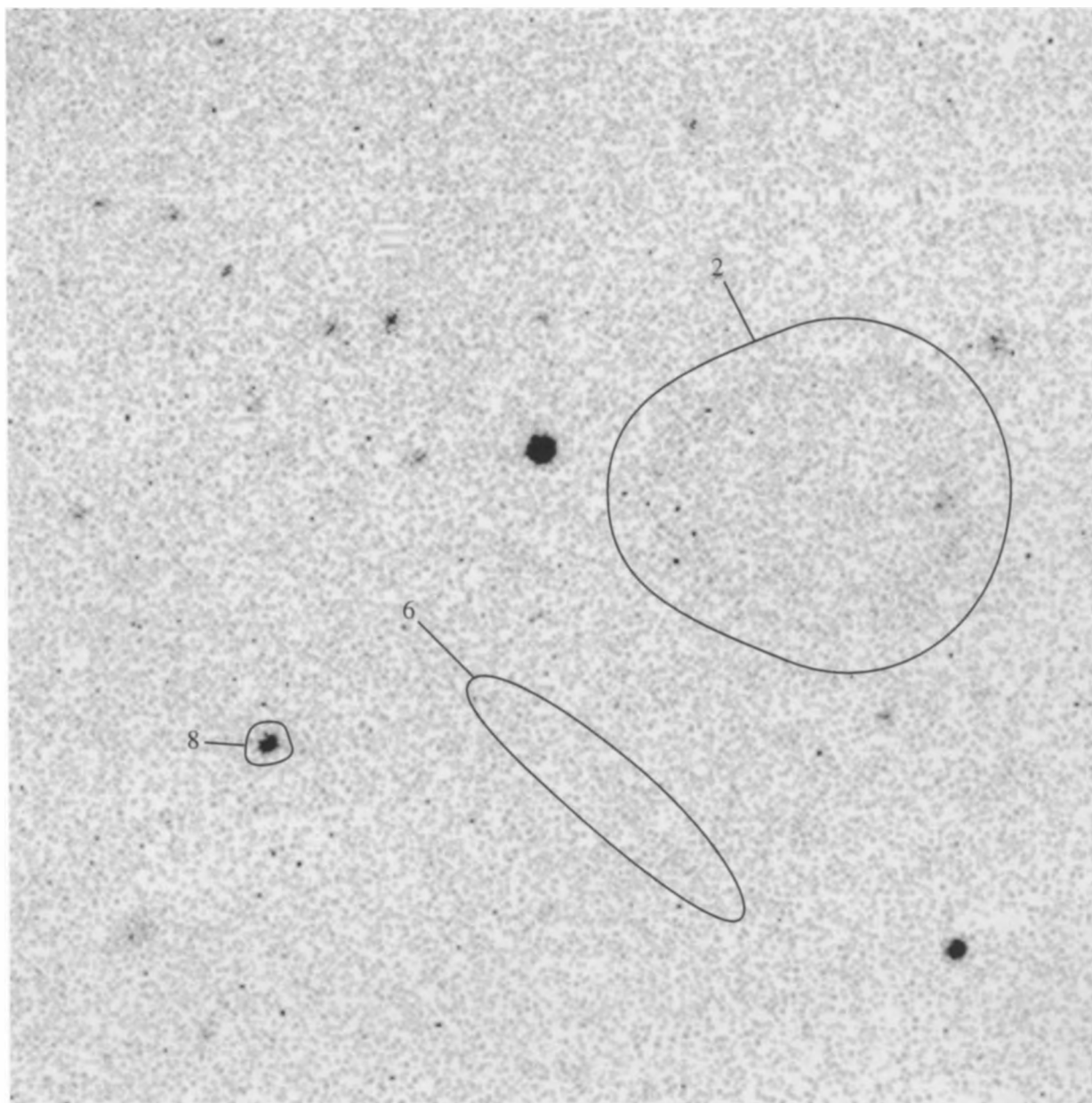
IC 1613

Chart 133



IC 1613

Chart 134



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IC 1613

References

1. Aaronson, M., Cook, K.H., Norris, J. 1985, "The AGB Population of Nearby Galaxies", in *Spectral Evolution of Galaxies*, edited by C. Chiosi and A. Renzini (Reidel, Dordrecht), p. 171.
2. Ables, H.D. 1971, "Optical Study of Nearby Galaxies", *Pub. Of the U.S. Naval Observatory*, Vol. 20, Part 4, 7.
3. Armandroff, T.E., & Massey, P. 1985, "Wolf-Rayet Stars in NGC 6822 and IC 1613", *ApJ*, 291, 685.
4. Armandroff, T.E., & Massey, P. 1991, "Wolf-Rayet Stars in Local Group Galaxies: Numbers and Spectral Properties", *AJ*, 102, 927.
5. Azzopardi, M., Lequeux, J., & Maeder, A. 1988, "The Number of Wolf-Rayet Stars in Local Group Galaxies", *A&A*, 189, 34.
6. Baade, W. 1929, "Der Nebel NGC II 1613", *Astr. Nach.*, 234, 407.
7. Breysacher, J., & Lequeux, J. 1983, "Search for Wolf-Rayet, Carbon and M Stars in External Galaxies with the GRISM/GRENS Technique", *The Messenger*, 33, 21.
8. Carlson, G., & Sandage, A. 1990, "Periods and Light Curves of 16 Cepheid Variables in IC 1613 Not Completed by Baade", *ApJ*, 352, 587.
9. Cook, K.H., Aaronson, M., Norris, J. 1986, "Carbon and M Stars in Nearby Galaxies: A Preliminary Survey Using a Photometric Technique", *ApJ*, 305, 634.
10. D'Odorico, S., & Dopita, M. 1983, "Chemical Abundances in the Interstellar Medium of Galaxies from Spectrophotometry of Supernova Remnants", in *Supernova Remnants and their X-Ray Emission*, IAU Symposium No. 101, edited by J. Danziger and P. Gorenstein (Reidel, Dordrecht), p. 517.
11. D'Odorico, S., Dopita, M.A., & Benvenuti, P. 1980, "A Catalog of Supernova Remnant Candidates in Nearby Galaxies", *A&AS*, 40, 67.
12. D'Odorico, S., & Rosa, M. 1982, "Wolf-Rayet Stars in Extragalactic H II Regions: Discovery of a Peculiar WR in IC 1613/#3", *A&A*, 105, 410.
13. Davidson, K., & Kinman, T.D. 1982, "Data on an Unusual Wolf-Rayet Star in the Nearby Galaxy IC 1613", *PASP*, 94, 634.
14. de Vaucouleurs, G. 1978, "The Extragalactic Distance Scale. II. Distances of the Nearest Galaxies from Primary Indicators", *ApJ*, 223, 730.
15. Dickel, J.R., D'Odorico, S., & Silverman, A. 1985, "VLA Observations of Three Extragalactic SNR at 20 and 6 cm", *AJ*, 90, 414.
16. Elias, J.H., & Frogel, J.A. 1985, "M Supergiants in Local Group Irregular Galaxies: Metallicities and Distances", *ApJ*, 289, 141.
17. Elmegreen, B.G., Elmegreen, D.M., & Morris, M. 1980, "On the Abundance of Carbon Monoxide in Galaxies: A Comparison of Spiral and Magellanic Irregular Galaxies", *ApJ*, 240, 455.
18. Eskridge, P.B. 1995, "IC 1613 X-1: A Galaxy Cluster at $z \sim 0.2$ Behind a Local Group Dwarf Galaxy", *PASP*, 107, 561.
19. Fabbiano, G., Kim, D.-W., & Trinchieri, G. 1992, "An X-Ray Catalog and Atlas of Galaxies", *ApJS*, 80, 531.

20. Freedman, W.L. 1986, "Recent CCD Observations of Cepheids in Nearby Galaxies: A Progress Report", in *Galaxy Distances and Deviations from Universal Expansion*, edited by B.F. Madore and R.B. Tully (Reidel, Dordrecht), p. 21.
21. Freedman, W.L. 1988, "New Cepheid Distances to Nearby Galaxies Based on *BVRI* CCD Photometry. I. IC 1613", *ApJ*, 326, 691.
22. Freedman, W.L. 1988, "Stellar Content of Nearby Galaxies. I. *BVRI* CCD Photometry for IC 1613", *AJ*, 96, 1248.
23. Garnett, D.R., Kennicutt, Jr., R.C., Chu, Y.-H., & Skillman, E.D. 1991, "He II Emission in Extragalactic H II Regions", *ApJ*, 373, 458.
24. Goss, W.M., & Lozinskaya, T.A. 1995, "Radio and IRAS Observations of Two Nebulae around WO Stars: G2.4+1.4 in the Galaxy and Sandage H II Region 3 in IC 1613", *ApJ*, 439, 637.
25. Hodge, P.W. 1978, "The Structure and Content of IC 1613", *ApJS*, 37, 145.
26. Hodge, P.W. 1980, "The Recent Evolutionary History of the Galaxies NGC 6822 and IC 1613", *ApJ*, 241, 125.
27. Hodge, P.W. 1986, "The Ages of Local Group Galaxies", *MSAIt*, 57, 553.
28. Hodge, P.W., Lee, M.G., & Gurwell, M. 1990, "The H II Regions of IC 1613", *PASP*, 102, 1245.
29. Hodge, P.W., Smith, T.R., Eskridge, P.B., MacGillivray, H.T., & Beard, S.M. 1991, "A Cosmos Study of IC 1613", *ApJ*, 369, 372.
30. Hoessel, J.G. 1986, "Luminosity Functions in Dwarf Irregulars", in *Luminous Stars and Associations in Galaxies*, IAU Symposium No. 116, edited by C.W.H. de Loore, A.J. Willis and P. Laskarides (Reidel, Dordrecht), p. 439.
31. Hoffman, G.L., Salpeter, E.E., Farhat, B., Roos, T., Williams, H., & Helou, G. 1996, "Arecibo H I Mapping of a Large Sample of Dwarf Irregular Galaxies", *ApJS*, 105, 269.
32. Huchtmeier, W.K., Seiradakis, J.H., & Materne, J. 1981, "The Neutral Hydrogen Distribution of Irregular Galaxies", *A&A*, 102, 134.
33. Humphreys, R.M. 1980, "Studies of Luminous Stars in Nearby Galaxies. V. The Local Group Irregulars NGC 6822 and IC 1613", *ApJ*, 238, 65.
34. Hunter, D.A., & Gallagher, III, J.S. 1985, "Star-Forming Properties and Histories of Dwarf Irregular Galaxies: Down but not Out", *ApJS*, 58, 533.
35. Hunter, D.A., Hawley, W.N., and Gallagher, III, J.S. 1993, "A Survey for Extra-H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
36. Kennicutt, Jr., R.C. 1984, "Structural Properties of Giant H II Regions in Nearby Galaxies", 287, 116.
37. Kingsburgh, R.L., & Barlow, M.J. 1995, "DR 1: A WO3 Star in IC 1613 and Its Surrounding Nebula, S3", *A&A*, 295, 171.
38. Klein, U., & Gräve, R. 1986, "Multi-Frequency Radio Continuum Observations of Dwarf Irregular Galaxies", *A&A*, 161, 155.
39. Lake, G. 1989, "Testing Modifications of Gravity", *ApJ*, 345, L17.
40. Lake, G., & Skillman, E.D. 1989, "The Mass Distribution and the Law of Gravity in the Local Group Dwarf Irregular Galaxy IC 1613", *AJ*, 98, 1274.
41. Lequeux, J. 1979, "Comparison of the Rates of Formation of Massive Stars and of the Initial Mass Functions in Galaxies of the Local Group", *A&A*, 71, 1.
42. Lequeux, J. 1980, "Stellar Studies in the Large Magellanic Cloud", *A&A*, 85, 305.
43. Lequeux, J., Meyssonnier, N., & Azzopardi, M. 1987, "An Objective-Prism Survey of Emission-Line objects in M33 and IC 1613", *A&AS*, 67, 169.

44. Madore, B.F., & Freedman, W.L. 1991, "The Cepheid Distance Scale", *PASP*, 103, 933.
45. Massey, P., Conti, P.S., & Armandroff, T.E. 1987, "The Spectra of Extragalactic Wolf-Rayet Stars", *AJ*, 94, 1538.
46. McAlary, C.W., Madore, B.F., & Davis, L.E. 1984, "The Distance to IC 1613 from Infrared Photometry of Cepheids", *ApJ*, 276, 487.
47. Meaburn, J., Clayton, C.A., & Whitehead, M.J. 1988, "The Dynamics of a Complex of Interlocking Giant Shells in the Local Group Dwarf Galaxy IC 1613", *MNRAS*, 235, 479.
48. Milgrom, M. 1991, "Criticism of Lake's Analysis of the Rotation Curves of Dwarf Spirals", *ApJ*, 367, 490.
49. Mould, J., & Aaronson, M. 1986, "The Formation and Evolution of Carbon stars", *ApJ*, 303, 10.
50. Ohta, K., Tomita, A., & Saitō, M. 1993, "CO-to-H₂ Conversion Factor in Dwarf Irregular Galaxies", *PASJ*, 45, L21.
51. Peimbert, M., Bohigas, J., & Torres-Peimbert, S. 1988, "On the Supernova Remnant S8, and Other Gaseous Nebulae, in IC 1613", *Rev. Mex. Astron. Astrof.*, 16, 45.
52. Price, J.S., Mason, S.F., & Gullixson, C.A. 1988, "CCD Surface Photometry of NGC 147, IC 1613, and NGC 6822", *BAAS*, 20, 701.
53. Price, J.S., Mason, S.F., & Gullixson, C.A. 1990, "The H II Regions of IC 1613", *AJ*, 100, 420.
54. Rice, W., Lonsdale, C.J., Soifer, B.T., Neugebauer, G., Kopan, E.L., Lloyd, L.A., de Jong, T., & Habing, H.J. 1988, "A Catalog of IRAS Observations of Large Optical Galaxies", *ApJS*, 68, 91.
55. Saha, A., Freedman, W.L., Hoessel, J.G., & Mossman, A.E. 1992, "RR Lyrae Stars in Local Group Galaxies. IV. IC 1613", *AJ*, 104, 1072.
56. Sandage, A. 1971, "The Distance of the Local Group Galaxy IC 1613 Obtained from Baade's Work on its Stellar Continent", *ApJ*, 166, 13.
57. Sandage, A. 1988, "Cepheids as Distance Indicators When Used Near their Detection Limit", *PASP*, 100, 935.
58. Sandage, A., & Katem, B. 1976, "The Brightest Stars in Nearby Galaxies. I. The Color-Magnitude Diagram and Luminosity Function for IC 1613", *AJ*, 81, 743.
59. Sandage, A., & Tammann, G.A. 1974, "Steps Toward the Hubble Constant. I. Calibration of the Linear Sizes of Extragalactic H II Regions", *ApJ*, 190, 525.
60. Smith, H.E. 1975, "Spectrophotometric Observations of Ionized Hydrogen Regions in Nearby Spiral and Irregular Galaxies", *ApJ*, 199, 591.
61. Tarrab, I. 1983, "Estimated Energy and Momentum Input to the Interstellar Medium for Several External Galaxies", *A&A*, 125, 308.
62. Tomita, A., Ohta, K., & Saitō, M. 1993, "H-Alpha Velocity Fields of Giant H II Regions in Four Nearby Dwarf Irregular Galaxies", *PASJ*, 45, 693.
63. van den Bergh, S. 1979, "Star Clusters in IC 1613 and in the Small Magellanic Cloud", *ApJ*, 230, 95.
64. Vangioni-Flam, E., Lequeux, J., Maucherat-Joubert, M., & Rocca-Volmerange, B. 1980, "Ultraviolet Studies of the Magellanic Clouds. II. Internal Extinction, Formation of Massive Stars, Comparison With Other Galaxies", *A&A*, 90, 73.
65. Volders, L., & Högbom, J.A. 1961, "Observations of Neutral Hydrogen in IC 1613, NGC 6822 and M82", *Bull. Ast. Inst. Neth.*, 15, 307.
66. Walker, A.R. 1987, "Notes on Cepheid Variables in Galaxies More Distant Than the Magellanic Clouds", *S. African Astron. Obs. Circ.*, 11, 125.
67. Wolf, M. 1906, "Extended Nebula Near 26 Ceti", *MNRAS*, 67, 91.

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Leo I

Alternate name(s): DDO 74

Right Ascension (2000): 10h 08m 27s

Declination (2000): +12d 18.5m

Type: dE3

Apparent magnitude (V): 10.2

Color (B-V): 0.75

(U-B): 0.29

(V-R):

Color Excess, E(B-V): 0.01

Absolute magnitude (M_V): -11.8

Distance (kpc): 250

Radial velocity (solar, km/sec): 285

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: 69; designations: HWV, V

Source: [15], [19]

Carbon stars: 15; designation: ALW

Source: [2], [3], [4]

HII regions: none

Source:

Planetary nebulae: none

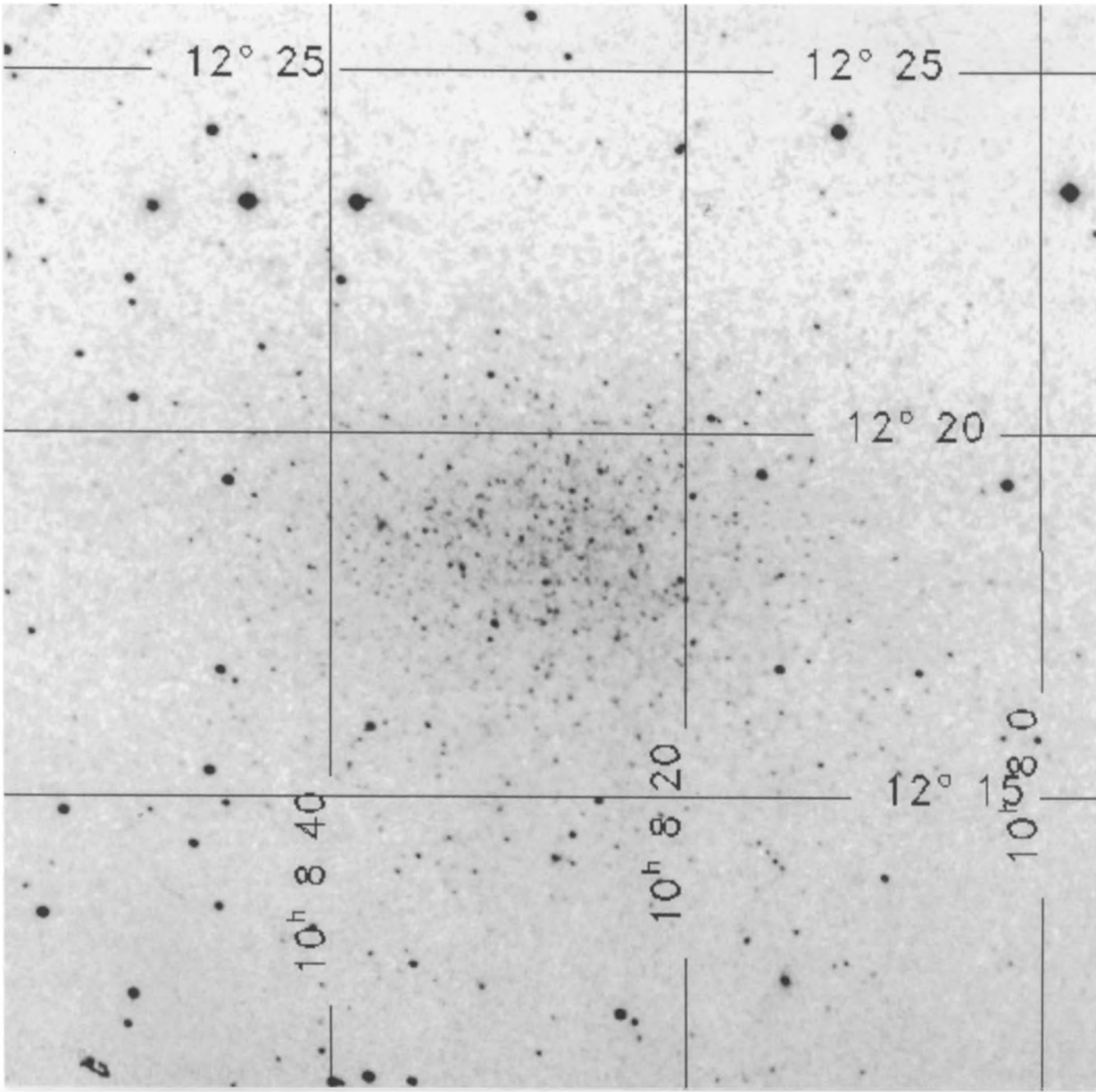
Source:

Dust clouds: none

Source:

Leo I

Chart 135



Leo I

Chart 136

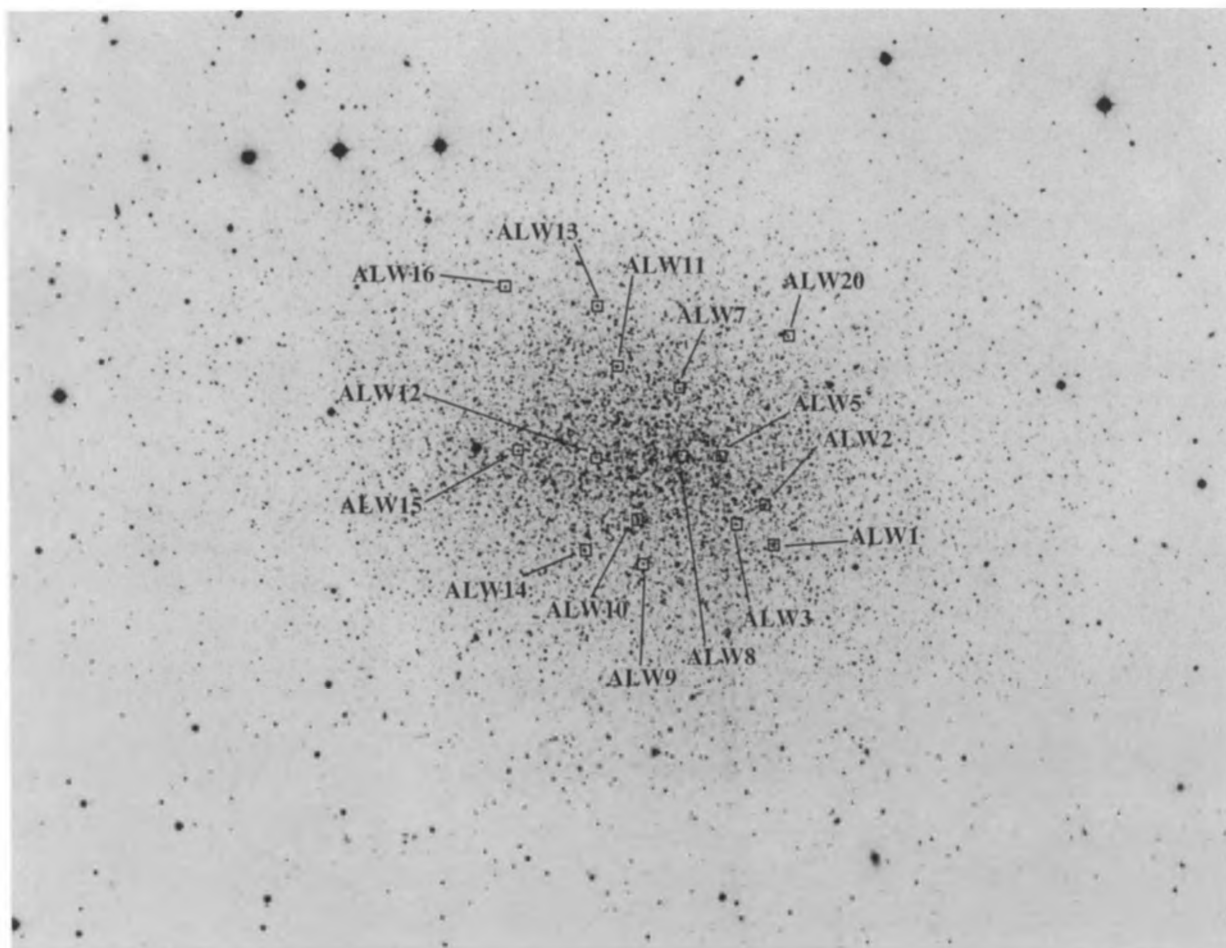
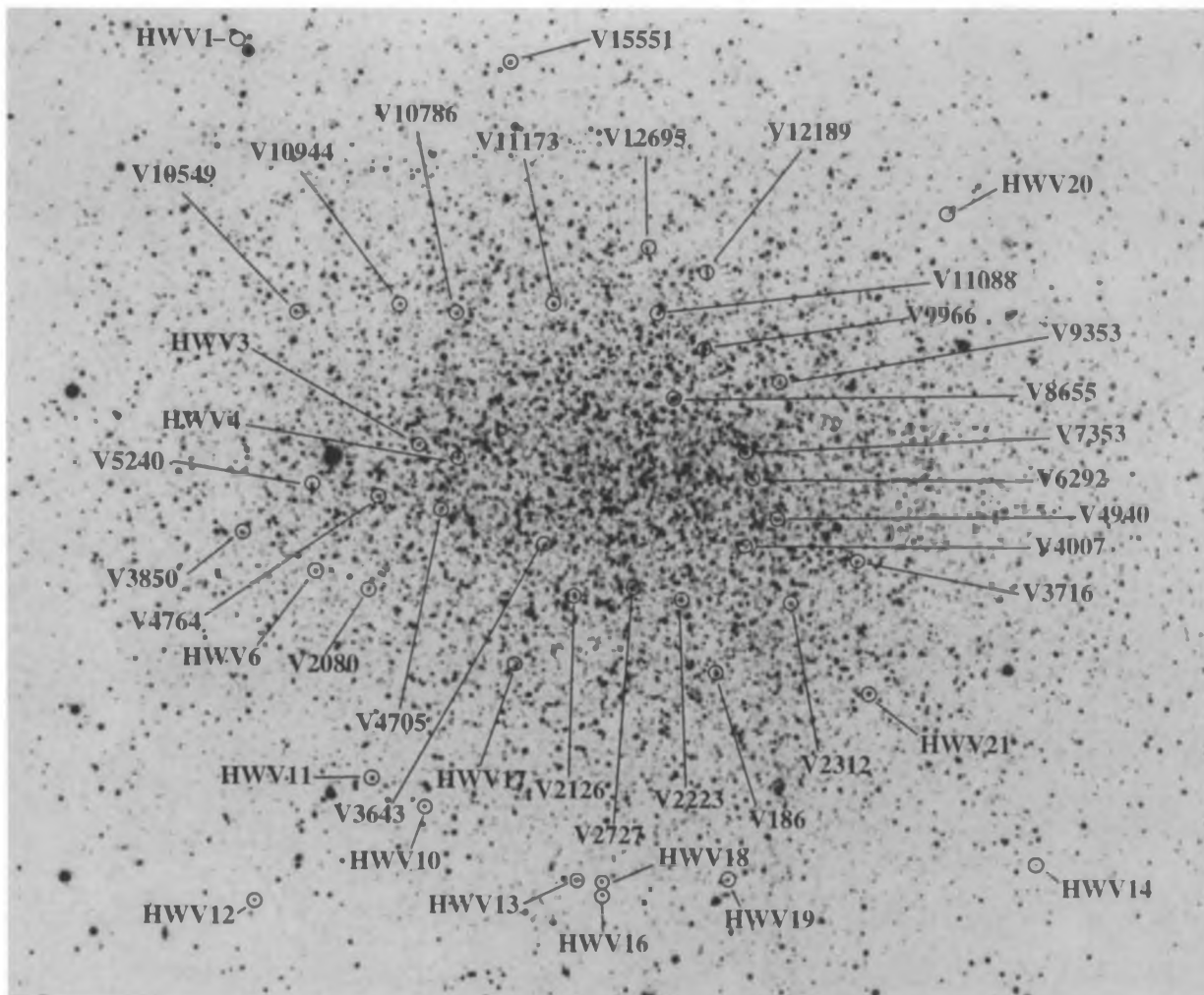
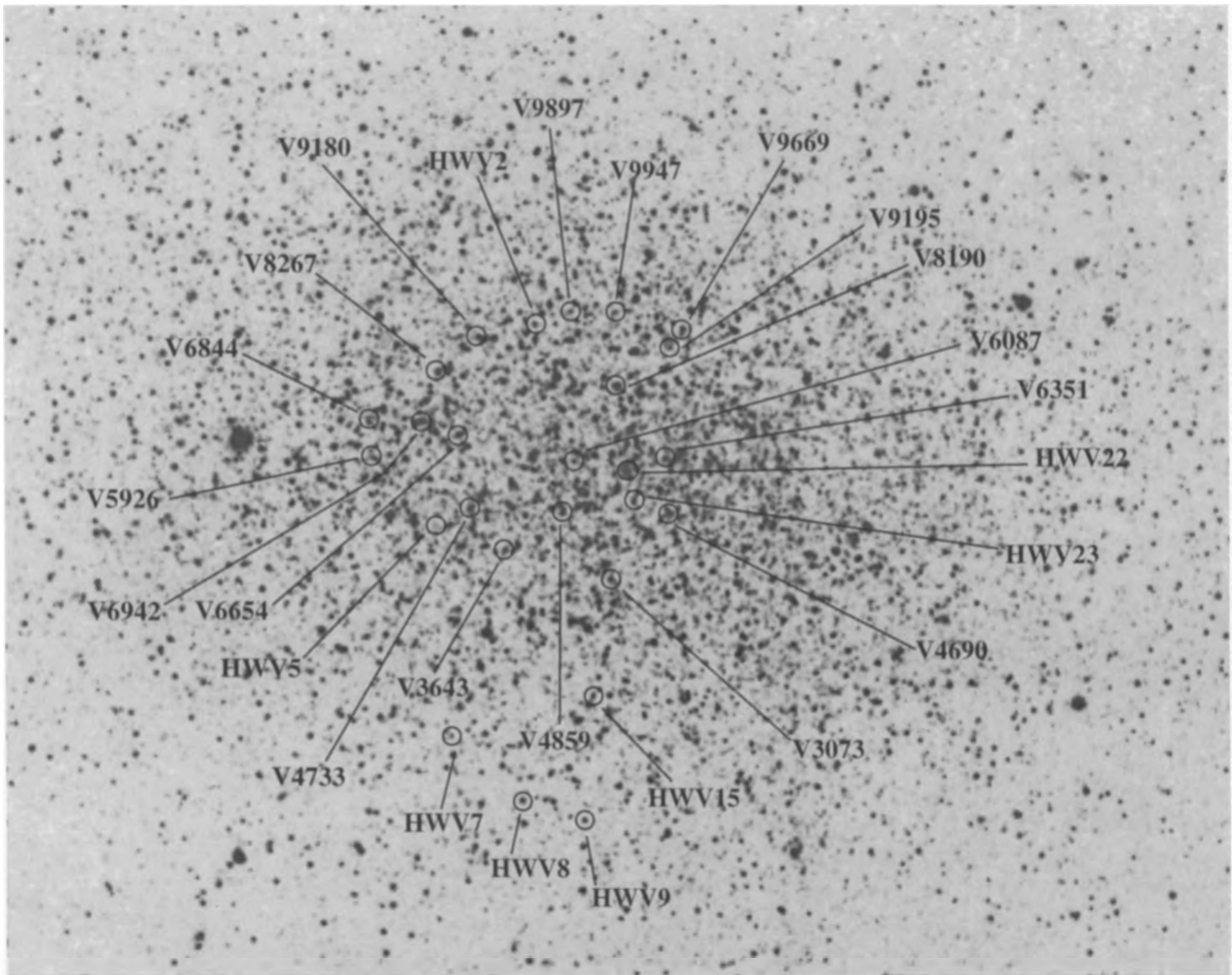


Chart 137



Leo I

Chart 138



Leo I

References

1. Aaronson, M., & Mould, J. 1985, "Infrared Photometry and the Comparative Stellar Content of Dwarf Spheroidals in the Galactic Halo", *ApJ*, 290, 191.
2. Aaronson, M., Olszewski, E.W., & Hodge, P.W. 1983, "Carbon Stars and the Seven Dwarfs", *ApJ*, 267, 274.
3. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1985, "New Carbon Stars in Spheroidal Galaxies. I. Sculptor, Carina, Leo I and Leo II Systems", *A&A*, 144, 388.
4. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1986, "New Carbon Stars in Spheroidal Galaxies. II. Draco, Ursa Minor, and New Data on Sculptor, Carina, and Leo I", *A&A*, 161, 232.
5. Bowen, D.V., Tolstoy, E., Ferrara, A., Blades, J.C., & Brinks, E. 1997, "The Absence of Diffuse Gas around the Dwarf Spheroidal Leo I", *ApJ*, 478, 530.
6. Byrd, G., Valtonen, M., McCall, M., & Innanen, K. 1994, "Orbits of the Magellanic Clouds and Leo I in Local Group History", *AJ*, 107, 2055.
7. Caputo, F., Castellani, V., Degl'Innocenti, S. 1995, "'Vertical' Horizontal Branches and the Age of the Dwarf Spheroidal Galaxy Leo I", *A&A*, 304, 365.
8. Caputo, F., Castellani, V., Degl'Innocenti, S. 1996, "Stellar Luminosity Function as an Age Indicator for the Dwarf Spheroidal Leo I", *A&A*, 309, 413.
9. Demers, S., Battinelli, P., Irwin, M.J., & Kunkel, W.E. 1995, "A Search for Stellar Aggregates in Dwarf Spheroidal Galaxies", *MNRAS*, 274, 491.
10. Demers, S., Irwin, M.J., & Gambu, I. 1994, "Deep CCD Photometry of the Dwarf Spheroidal Galaxy Leo I", *MNRAS*, 266, 7.
11. Faber, S.M., & Lin, D.N.C. 1983, "Is there Non-Luminous Matter in Dwarf Spheroidal Galaxies?", *ApJ*, 266, L17.
12. Fox, M.F., & Pritchett, C.J. 1987, "The Giant Branch of Leo I", *AJ*, 93, 1381.
13. Harrington, R.G., & Wilson, A.G. 1950, "Two New Stellar Systems in Leo", *PASP*, 62, 118.
14. Hodge, P.W. 1963, "Distribution of Stars in the Leo I Dwarf Galaxy", *AJ*, 68, 470.
15. Hodge, P.W., & Wright, F.W. 1978, "Variable Stars in the Leo I Dwarf Galaxy", *AJ*, 83, 228.
16. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
17. Keane, M., Olszewski, E., Suntzeff, N., & Saha, A. 1993, "The Horizontal Branch and Variable Stars in Leo I: Further Evidence for an Intermediate Age Population", *BAAS*, 25, 844.
18. Knapp, G.R., Kerr, F.J., & Bowers, P.F. 1978, "Upper Limits to the H I Content of the Dwarf Spheroidal Galaxies", *AJ*, 83, 360.
19. Lee, M.G., Freedman, W., Mateo, M., Thompson, I., Roth, M., & Ruiz, M.-T. 1993, "Leo I: The Youngest Milky Way Dwarf Spheroidal Galaxy?", *AJ*, 106, 1420.
20. Lee, M.G., Thompson, I., Freedman, W.L., Mateo, M., Roth, M., & Ruiz, M.-T. 1992, "Stellar Populations in the Dwarf Spheroidal Galaxy Leo I and the Mass of our Galaxy", in the *Globular Cluster-Galaxy Connection*, ASP Conf. Series, edited by J. Brodie and G. Smith.
21. Mateo, M., Olszewski, E.W., Lee, M.-G., Saha, A., Hodge, P., Keane, M., Suntzeff, N., Freedman, W., & Thompson, I. 1994, "Deep HST Photometry of the Leo I Dwarf Spheroidal Galaxy", *BAAS*, 26, 1395.

22. Reid, N., & Mould, J. 1991, "The Leo I Color-Magnitude Diagram", AJ, 101, 1299.
23. Suntzeff, N.B., Aaronson, M., Olszewski, E.W., & Cook, K.H. 1986, "The Abundances and Velocities of the Leo Dwarf Spheroidals", AJ, 91, 1091.
24. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", ApJ, 428, 617.
25. Zaritsky, D., Olszewski, E.W., Schommer, R.A., Peterson, R.C. & Aaronson, M. 1989, "Velocities of Stars in Remote Galactic Satellites and the Mass of the Galaxy", ApJ, 345, 759.

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Leo II

Alternate name(s): DDO 93

Right Ascension (2000): 11h 13m 29s

Declination (2000): +22d 09.2m

Type: dE0

Apparent magnitude (V): 12.0

Color (B-V): 0.65

(U-B): 0.29

(V-R):

Color Excess, E(B-V): 0.02

Absolute magnitude (M_V): -9.6

Distance (kpc): 205

Radial velocity (solar, km/sec): 76

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: not shown

Source:

Carbon stars: 7; designation: C

Source: [2], [3]

HII regions: none

Source:

Planetary nebulae: none

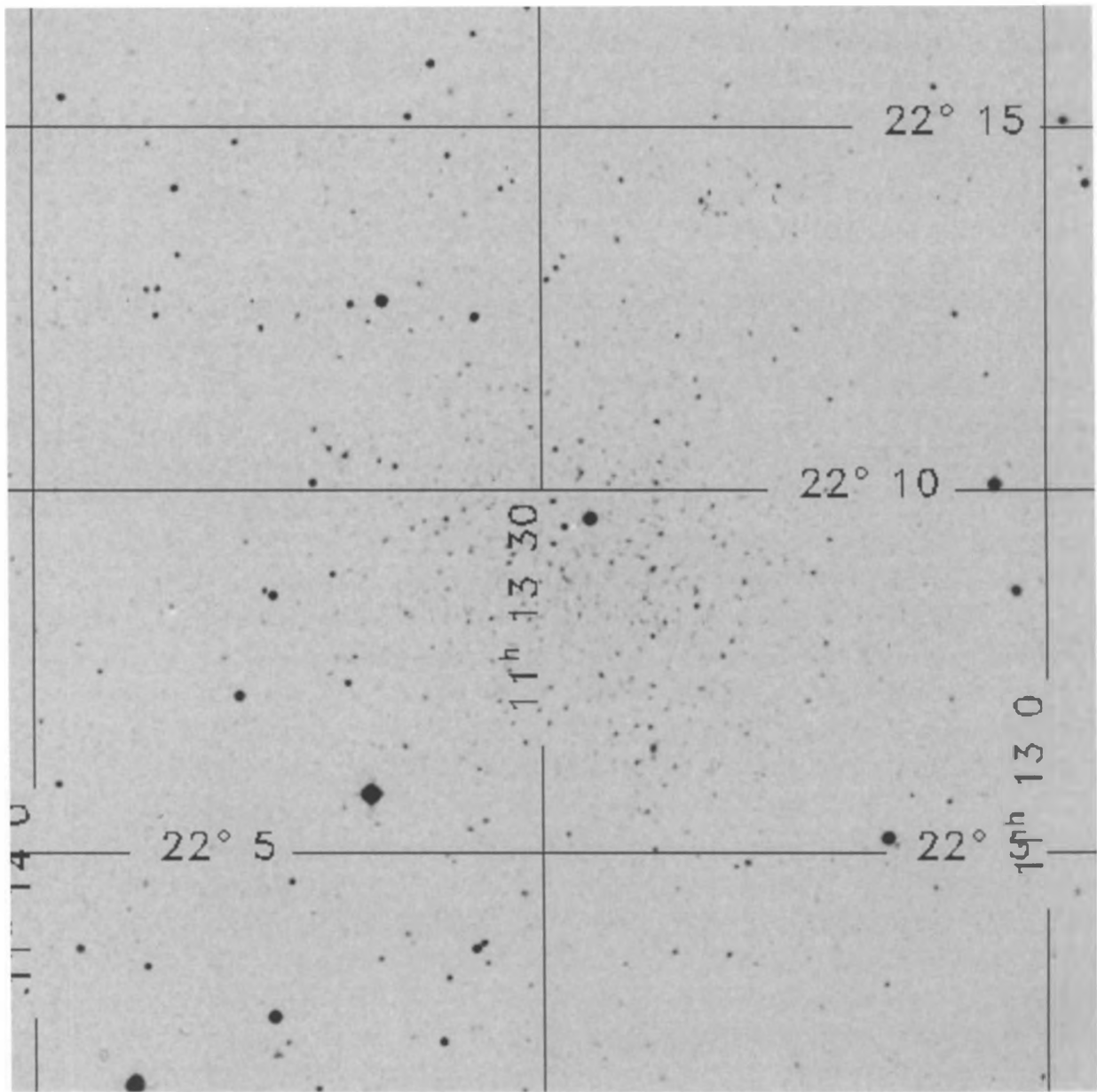
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Dust clouds: none

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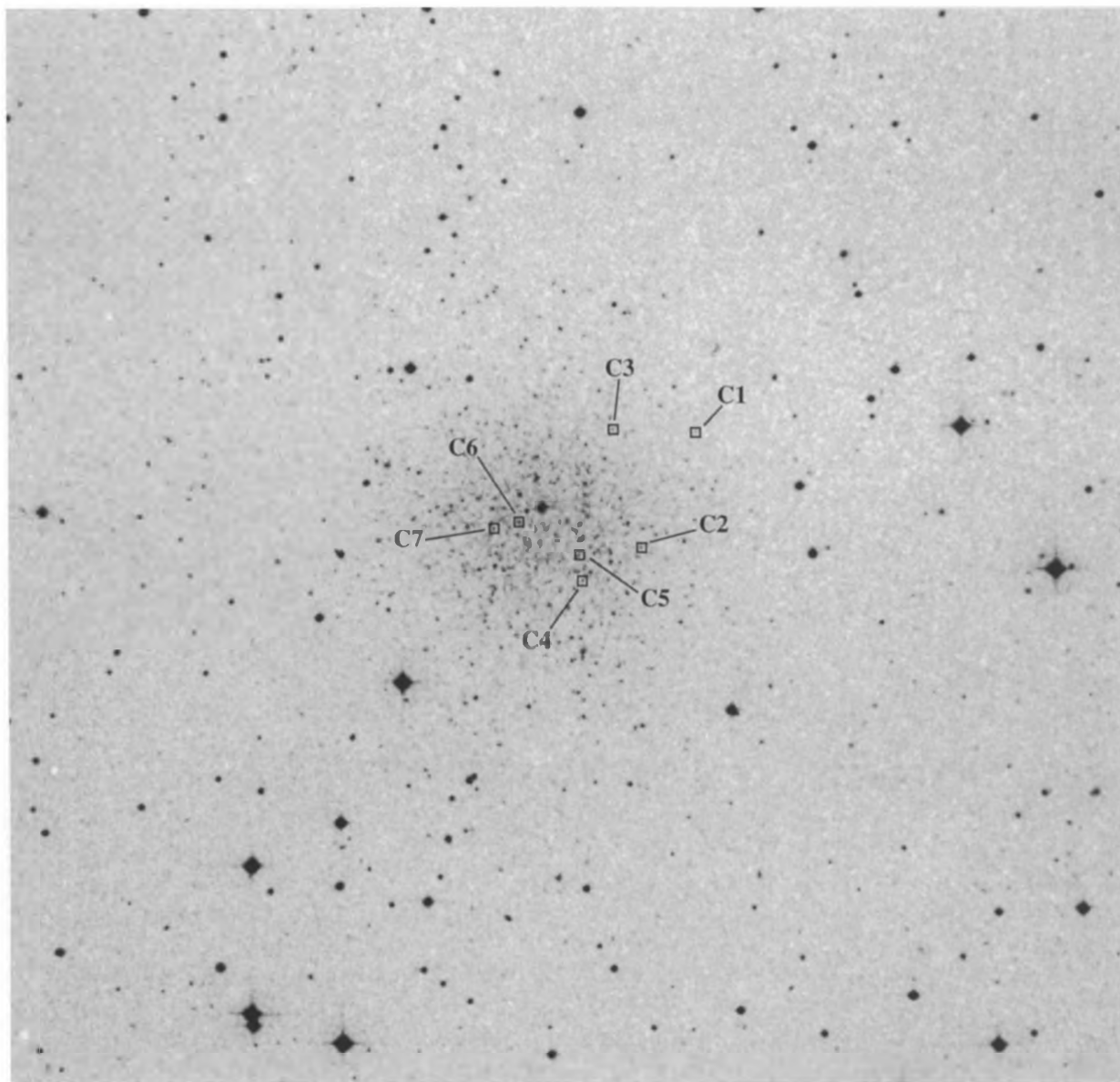
Leo II

Chart 139



Leo II

Chart 140



Leo II

References

1. Aaronson, M., & Mould, J. 1985, "Infrared Photometry and the Comparative Stellar Content of Dwarf Spheroidals in the Galactic Halo", *ApJ*, 290, 191.
2. Aaronson, M., Olszewski, E.W., & Hodge, P.W. 1983, "Carbon Stars and the Seven Dwarfs", *ApJ*, 267, 274.
3. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1985, "New Carbon Stars in Spheroidal Galaxies. I. Sculptor, Carina, Leo I and Leo II Systems", *A&A*, 144, 388.
4. Bono, G., Caputo, F., Santolamazza, P., Cassisi, S., & Piersimoni, A. 1997, "Evolutionary Scenario for Metal-Poor Pulsating Stars. II. Anomalous Cepheids", *AJ*, 113, 2209.
5. Demers, S., Battinelli, P., Irwin, M.J., & Kunkel, W.E. 1995, "A Search for Stellar Aggregates in Dwarf Spheroidal Galaxies", *MNRAS*, 274, 491.
6. Demers, S., & Harris, W.E. 1983, "A Color-Magnitude Diagram for Leo II", *AJ*, 88, 329.
7. Demers, S., & Irwin, M.J. 1993, "Deep CCD Photometry of the Dwarf Spheroidal Galaxy Leo II", *MNRAS*, 261, 657.
8. Faber, S.M., & Lin, D.N.C. 1983, "Is There Nonluminous Matter in Dwarf Spheroidal Galaxies?", *ApJ*, 266, L17.
9. Harrington, R.G., & Wilson, A.G. 1950, "Two New Stellar Systems in Leo", *PASP*, 62, 118.
10. Hodge, P.W. 1962, "Distribution of Stars in the Leo II Dwarf Galaxy", *AJ*, 67, 125.
11. Hodge, P.W. 1982, "The Color and Surface Brightness of the Leo II Dwarf Galaxy", *AJ*, 87, 1668.
12. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
13. Knapp, G.R., Kerr, F.J., & Bowers, P.F. 1978, "Upper Limits to the H I Content of the Dwarf Spheroidal Galaxies", *AJ*, 83, 360.
14. Lee, M.G. 1995, "VI CCD Photometry of the Dwarf Spheroidal Galaxy Leo II", *AJ*, 110, 1155.
15. Mighell, K.J., & Rich, R.M. 1996, "The Leo II Dwarf Spheroidal – An Old Galaxy with a Large Intermediate-Age Population", *AJ*, 111, 777.
16. Nemec, J.M., Nemec, A.F.L., & Lutz, T.E. 1994, "Period-Luminosity-Metallicity Relations, Pulsation Modes, Absolute Magnitudes, and Distances for Population II Variable Stars", *AJ*, 108, 222.
17. Suntzeff, N.B., Aaronson, M., Olszewski, E.W., & Cook, K.H. 1986, "The Abundance and Velocities of the Leo Dwarf Spheroidals", *AJ*, 91, 1091.
18. Swope, H.H. 1967, "Progress Report on the Leo II System", *PASP*, 79, 439.
19. Swope, H.H. 1968, "Thirteen Periodic Variable Stars Brighter than the Normal RR Lyrae-Type Variables in Four Dwarf Galaxies", *AJ*, 73, S204.
20. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.
21. Vogt, S.S., Mateo, M., Olszewski, E.W., & Keane, M.J. 1995, "Internal Kinematics of the Leo II Dwarf Spheroidal Galaxy", *AJ*, 109, 151.
22. Zaritsky, D., Olszewski, E.W., Schommer, R.A., Peterson, R.C., & Aaronson, M. 1989, "Velocities of Stars in Remote Galactic Satellites and the Mass of the Galaxy", *ApJ*, 345, 759.

LGS 3

Alternate name(s): Pisces
 Right Ascension (2000): 01h 03m 43s
 Declination (2000): +21d 53.1m
 Type: dE/dIrr
 Apparent magnitude (V): 14.26
 Color (B-V): 0.73
 (U-B):
 (V-R): 0.42
 Color Excess, E(B-V): 0.08
 Absolute magnitude (M_V): -10.5
 Distance (kpc): 810
 Radial velocity (solar, km/sec): -272

Objects Identified On the Atlas:

Globular clusters: none

 Source:

Open clusters: none

 Source:

OB associations: none

 Source:

Variable stars: none

 Source:

Carbon stars: none

 Source:

HII regions: none

 Source:

Planetary nebulae: none

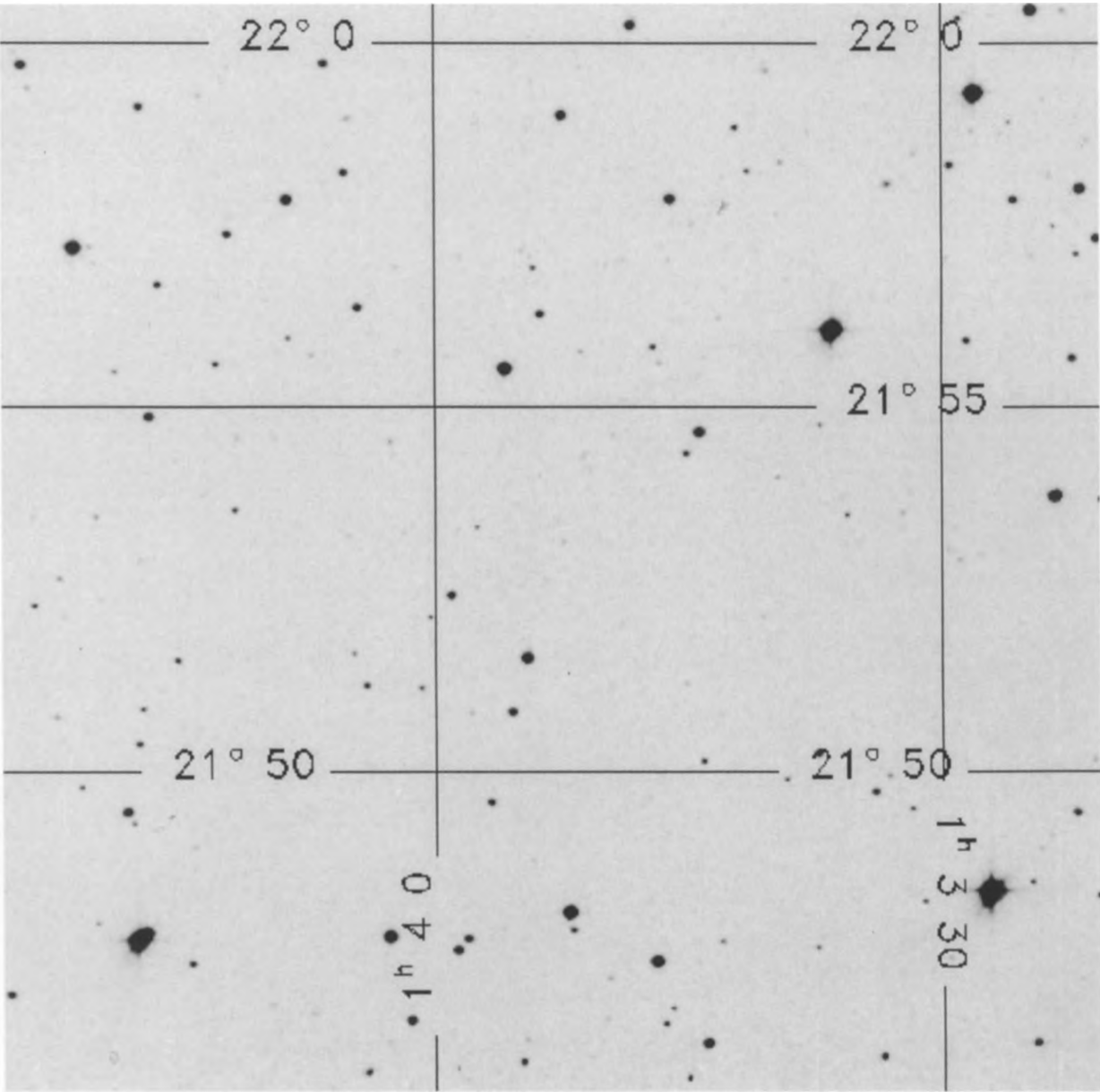
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Dust clouds: none

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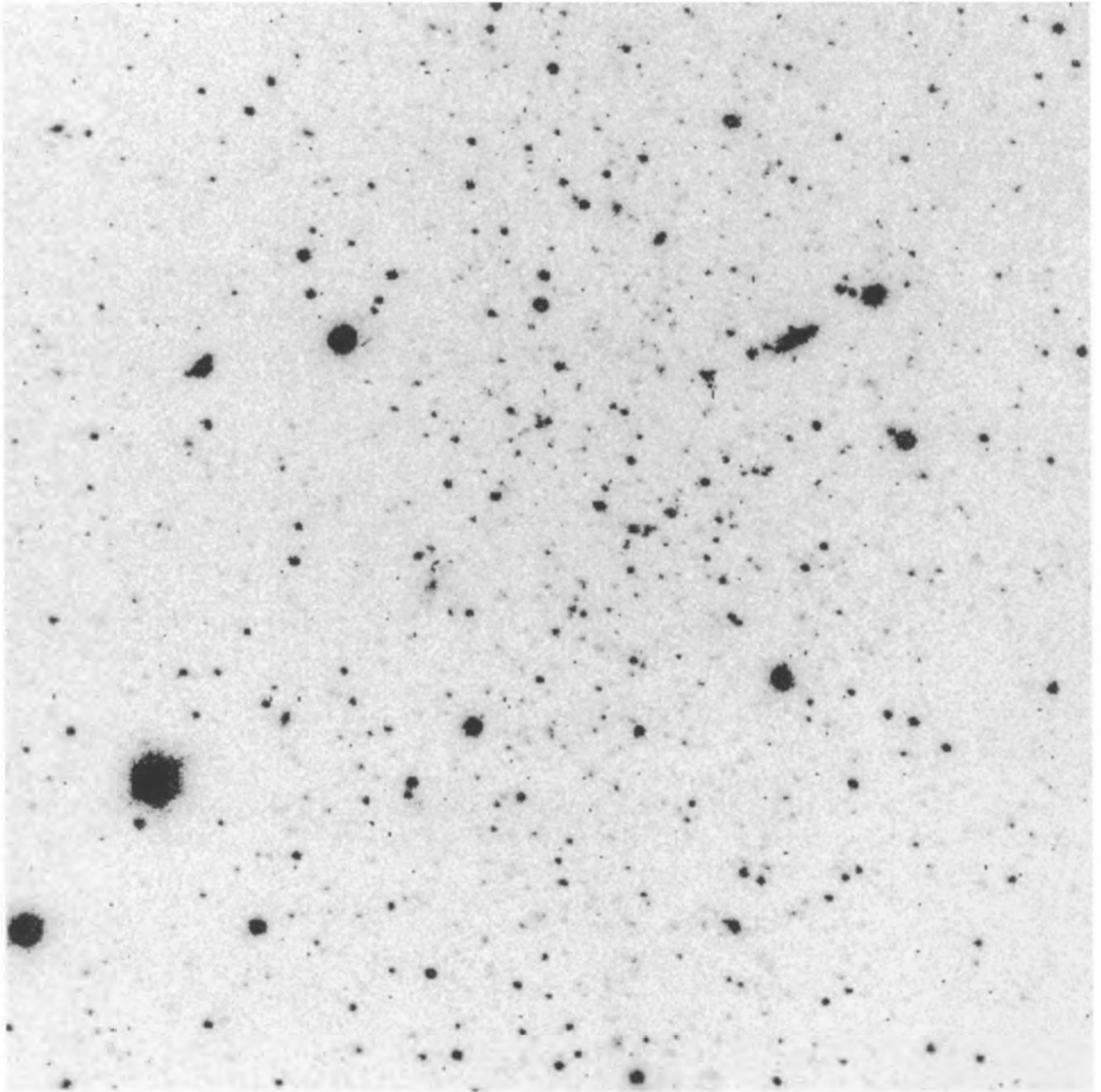
LGS 3

Chart 141



LGS 3

Chart 142



LGS 3

References

1. Aparicio, A., Gallart, C., & Bertelli, G. 1997, "The Stellar Content and the Star Formation History of the Local Group Dwarf Galaxy LGS 3", *AJ*, 114, 680.
2. Christian, C.A., & Tully, R.B. 1983, "The Local Group Irregular Galaxies LGS 3 and Pegasus", *AJ*, 88, 934.
3. Cook, K.H., & Olszewski, E. 1989, "The Dwarf Galaxy LGS 3", *BAAS*, 21, 775.
4. Hodge, P., & Miller, B.W. 1995, "H II Regions in Four Galaxies in and near the Local Group", *ApJ*, 451, 176.
5. Hunter, D.A., Hawley, W.N., & Gallagher, J.S. 1993, "A Survey for Extra-H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
6. Karachentseva, V.E., Prugniel, P., Vennik, J., Richter, G.M., Thuan, T.X., & Martin, J.M. 1996, "CCD and HI Observations of LSB Dwarf Galaxies in the General Field", *A&AS*, 117, 343.
7. Kowal, C., Lo, K.Y., & Sargent, W.L.W. 1978, *IAUC No. 3305*.
8. Lee, M.G. 1995, "Stellar Populations of the Dwarf Galaxy LGS 3 in the Local Group", *AJ*, 110, 1129.
9. Lo, K.Y., Sargent, W.L.W., & Young, K. 1993, "The H I Structure of Nine Intrinsically Faint Dwarf Galaxies", *AJ*, 106, 507.
10. Mould, J. 1997, "The Star-Formation History of LGS 3", *PASP*, 109, 125.
11. Sargent, W.L.W., & Lo, K.Y. 1986, "The H I Structures of Extreme Dwarf Galaxies", in *Star Forming Dwarf Galaxies and Related Objects*, edited by D. Kunth, T. Thuan and J.T.T. Van (Editions Frontieres, Gif-sur-Yvette), p. 253.
12. Schild, R. 1980, "CCD Camera Observations of Local Group Galaxy LGS-3", *ApJ*, 241, 63.
13. Tacconi, L.J., & Young, J.S. 1987, "The CO Contents of Dwarf Irregular Galaxies", *ApJ*, 322, 681.
14. Thuan, T.X., & Martin, G.E. 1979, "A New Dwarf Galaxy in the Local Group", *ApJ*, 232, L11.
15. Tikhonov, N., & Makarova, L. 1996, "A Colour-Magnitude Diagram of the Pisces Dwarf Galaxy", *AN*, 317, 179.
16. Young, J.S., et al. 1995, "The FCRAO Extragalactic CO Survey. I. The Data", *ApJS*, 98, 219.
17. Young, L.M., & Lo, K.Y. 1997, "The Neutral Interstellar Medium in Nearby Dwarf Galaxies. III. Sagittarius DIG, LGS 3, and Phoenix", *ApJ*, 490, 710.

NGC 147

Alternate name(s): DDO 3

Right Ascension (2000): 00h 33m 12s

Declination (2000): +48d 30.5m

Type: dE4

Apparent magnitude (V): 9.41

Color (B-V): 0.92

(U-B): 0.32

(V-R): 0.55

Color Excess, E(B-V): 0.04

Absolute magnitude (MV): -14.9

Distance (kpc): 715

Radial velocity (solar, km/sec): -193

Objects Identified On the Atlas:

Globular clusters: 4; designation: GC

Source: [10]

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: not shown

Source: [16]

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: 5; designation: PN

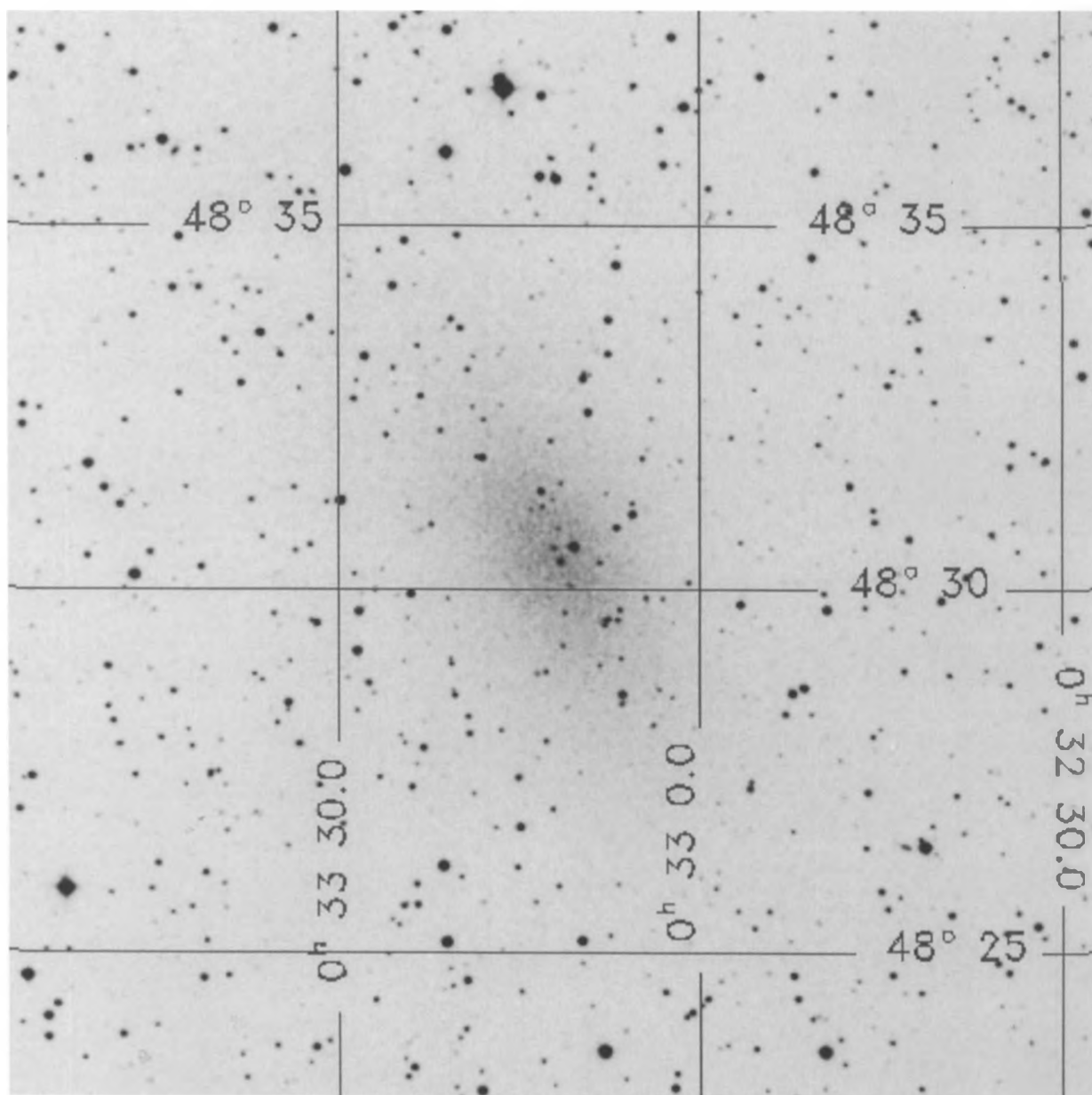
Source: [7]

Dust clouds: none

Source:

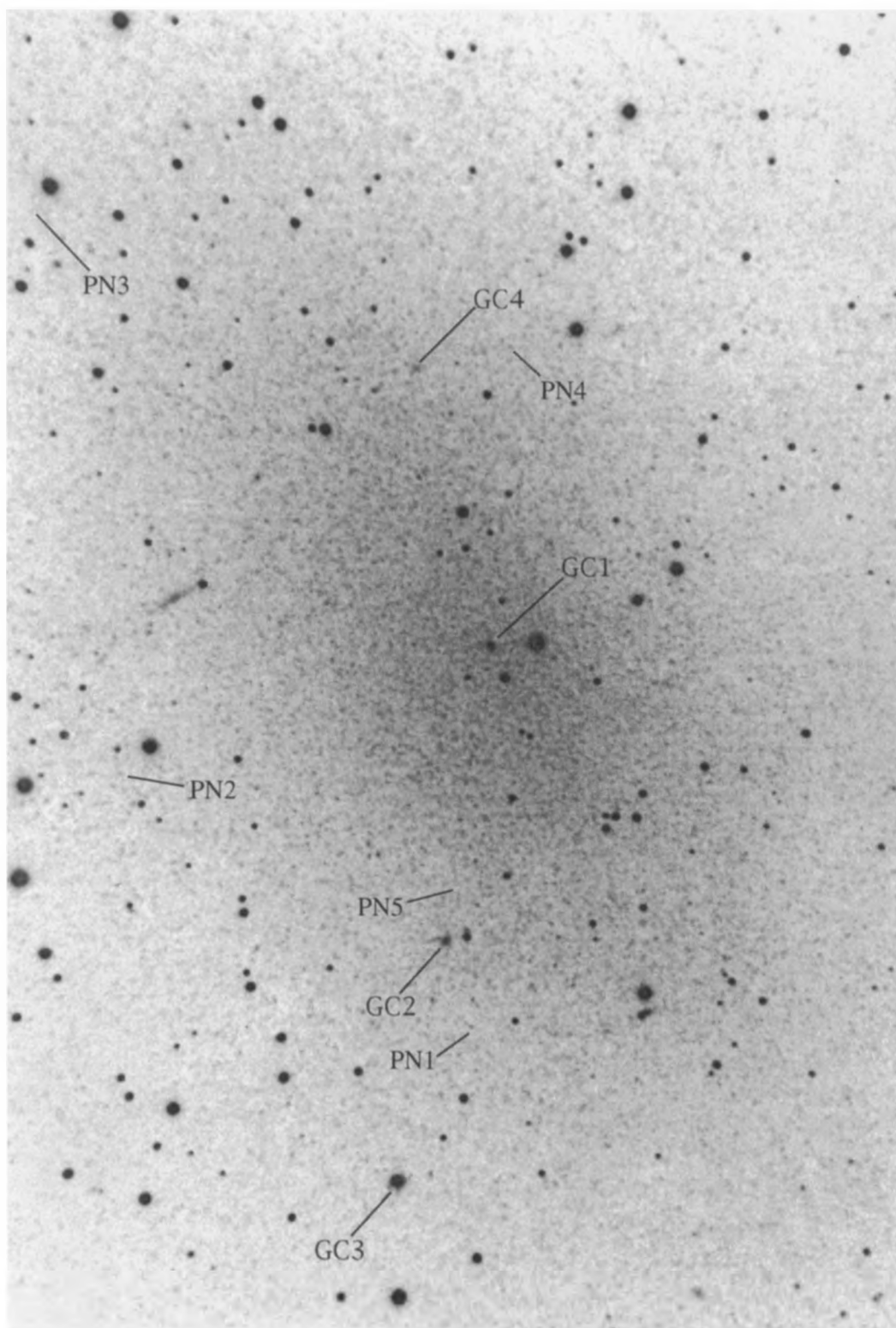
NGC 147

Chart 143



NGC 147

Chart 144



NGC 147

References

1. Baade, W. 1944, "NGC 147 and NGC 185, Two New Members of the Local Group of Galaxies", *ApJ*, 100, 147.
2. Bender, R. Paquet, A., & Nieto, J.-L. 1991, "Internal Stellar Kinematics of Three Dwarf Ellipticals in the Local Group", *A&A*, 246, 349.
3. Brandt, W.N., Ward, M. J., Fabian, A.C., & Hodge, P.W. 1997, "ROSAT HRI Observations of the Local Group Galaxies IC 10, NGC 147 and NGC 185", *MNRAS*, 291, 709.
4. Da Costa, G.S., & Mould, J.R. 1988, "The Globular Clusters of the Dwarf Elliptical Galaxies NGC 147, NGC 185, and NGC 205. I. Abundances", *ApJ*, 334, 159.
5. Davidge, T.J., 1994, "V and I Photometry of Bright Giants in the Central Regions of NGC 147", *AJ*, 108, 2123.
6. Ford, H. C. 1978, "Planetary Nebulae in the Andromeda Galaxy and its Companions", in *Planetary Nebulae, Observations and Theory*, IAU Symposium No. 76, edited by Y. Terzian (Reidel, Dordrecht), p. 19.
7. Ford, H. C., Jacoby, G., & Jenner, D. C. 1977, "Planetary Nebulae in Local Group Galaxies. IV. Identifications, Positions, and Radial Velocities of Nebulae in NGC 147 and NGC 185", *ApJ*, 213, 18.
8. Han, M., et al. 1997, "Stellar Populations in the Dwarf Elliptical Galaxy NGC 147", *AJ*, 113, 1001.
9. Ho, L. C., Filippenko, A. V., & Sargent, W. L. W. 1995, "A Search for 'Dwarf' Seyfert Nuclei. II. An Optical Spectral Atlas of the Nuclei of Nearby Galaxies", *ApJS*, 98, 477.
10. Hodge, P. W. 1976, "The Structure of NGC 147", *AJ*, 81, 25.
11. Huchra, J. P., Brodie, J. P., Caldwell, N., Christian, C., & Schommer, R. 1996, "Extragalactic Globular Clusters. IV. The Data", *ApJS*, 102, 29.
12. Kent, S. M. 1987, "Surface Photometry of Six Local Group Galaxies", *AJ*, 94, 306.
13. Mould, J. R., Kristian, J., & Da Costa, G. S. 1983, "Stellar Populations in Local Group Dwarf Elliptical Galaxies. I. NGC 147", *ApJ*, 270, 471.
14. Price, J. S., Mason, S. F., & Gullixson, C. A. 1988, "CCD Surface Photometry of NGC 147, IC 1613, and NGC 6822", *BAAS*, 20, 701.
15. Saha, A., & Hoessel, J. G. 1987, "A Search for RR Lyrae Variables in NGC 147", *AJ*, 94, 1556.
16. Saha, A., Hoessel, J. G., & Mossman, A. E. 1990, "RR Lyrae Stars in Local Group Galaxies. II. NGC 147", *AJ*, 100, 108.
17. Sharov, A. S., & Lyuty, V. M. 1983, "Photoelectric Catalogue of Globular Clusters in the Andromeda Nebula M31 and its Companions NGC 147, NGC 185, and NGC 205", *Ap&SS*, 90, 371.
18. Sitko, M. L. 1984, "Infrared Photometry of Globular Clusters in M31", *ApJ*, 286, 209.
19. Young, L. M., & Lo, K. Y. 1997, "The Neutral Interstellar Medium in Nearby Dwarf Galaxies. II. NGC 185, NGC 205, and NGC 147", *ApJ*, 476, 127.

NGC 185

Alternate name(s): UGC 396

Right Ascension (2000): 00h 38m 58s

Declination (2000): +48d 20.2m

Type: dE3

Apparent magnitude (V): 9.09

Color (B-V): 1.02

(U-B): 0.34

(V-R): 0.60

Color Excess, E(B-V): 0.19

Absolute magnitude (M_V): -15.4

Distance (kpc): 620

Radial velocity (solar, km/sec): -204

Objects Identified On the Atlas:

Globular clusters: 7; designation: GC

Source: [17], [19]

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: not shown

Source: [30]

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: 4; designation: PN

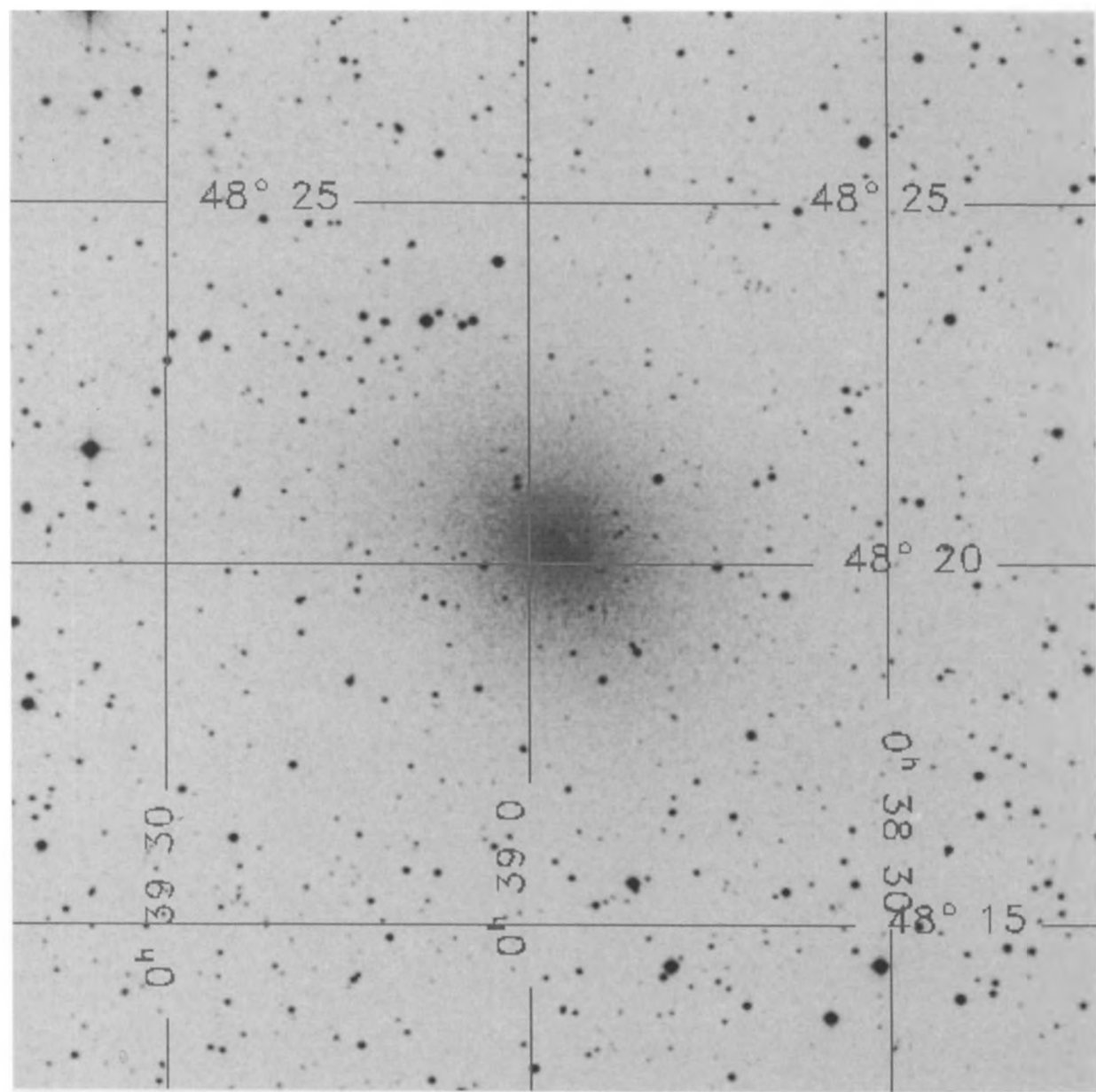
Source: [8], [9]

Dust clouds: 2, designation: Roman numerals

Source: [17]

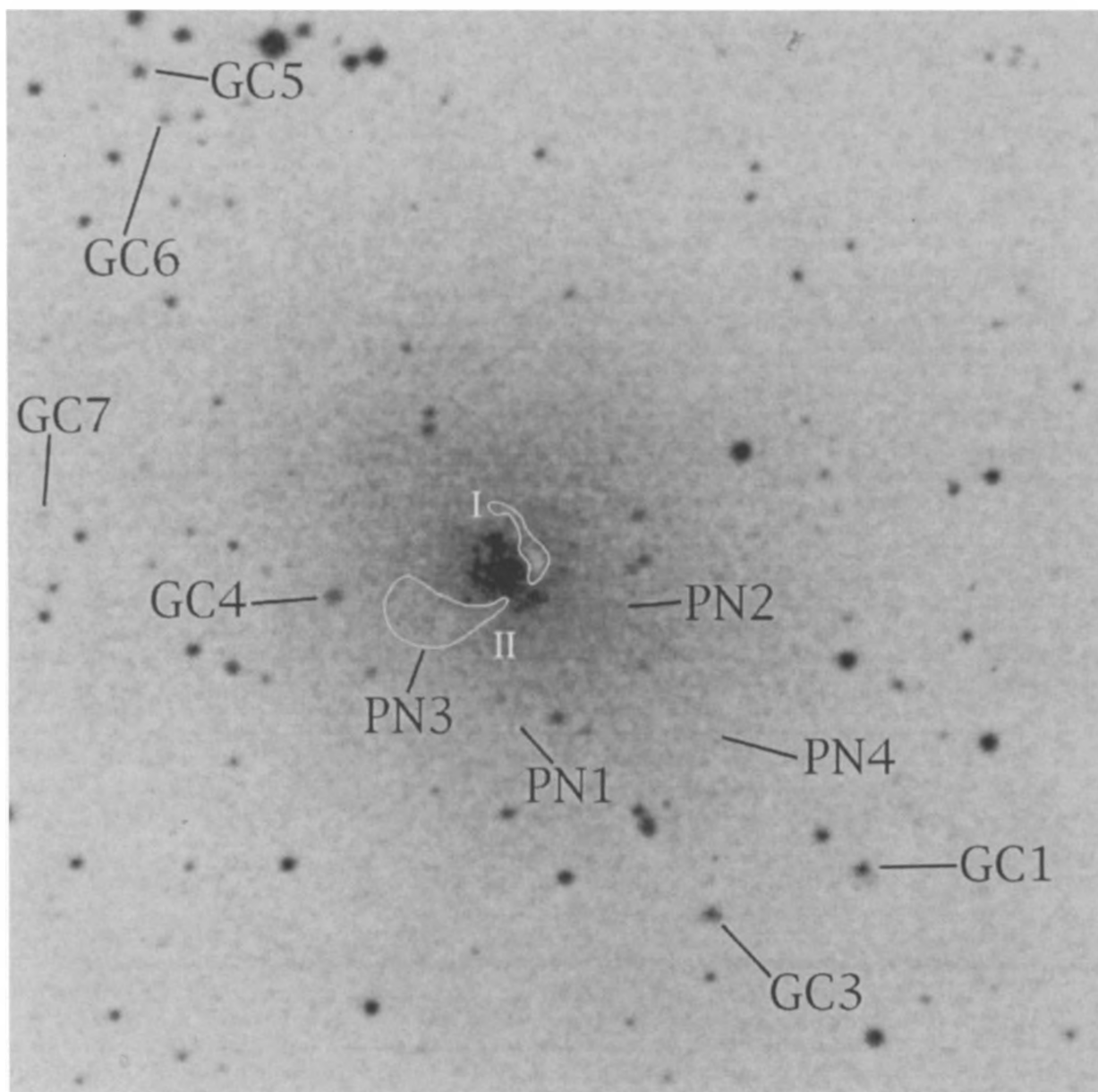
NGC 185

Chart 145



NGC 185

Chart 146



NGC185

References

1. Baade, W. 1944, "NGC 147 and NGC 185, Two New Members of the Local Group of Galaxies", *ApJ*, 100, 147.
2. Bender, R. Paquet, A., & Nieto, J.-L. 1991, "Internal Stellar Kinematics of Three Dwarf Ellipticals in the Local Group", *A&A*, 246, 349.
3. Brandt, W.M., Ward, M.J., Fabian, A.C., & Hodge, P.W. 1997, "ROSAT HRI Observations of the Local Group Galaxies IC 10, NGC 147 and NGC 185", *MNRAS*, 291, 709.
4. Ciardullo, R., Jacoby, G.H., Ford, H.C., & Neill, J.D. 1989, "Planetary Nebulae as Standard Candles. II. The Calibration in M31 and its Companions", *ApJ*, 339, 53.
5. Da Costa, G.S., & Mould, J.R. 1988, "The Globular Clusters of the Dwarf Elliptical Galaxies NGC 147, NGC 185, and NGC 205. I. Abundances", *ApJ*, 334, 159.
6. Dickel, J.R., D'Odorico, S., & Silverman, A. 1985, "VLA Observations of Three Extragalactic SNR at 20 and 6 cm", *AJ*, 90, 414.
7. Ford, H.C. 1978, "Planetary Nebulae in the Andromeda Galaxy and its Companions", in *Planetary Nebulae, Observations and Theory*, IAU Symposium No. 76, edited by Y. Terzian (Reidel, Dordrecht), p. 19.
8. Ford, H.C., Jacoby, G., & Jenner, D.C. 1977, "Planetary Nebulae in Local Group Galaxies. IV. Identifications, Positions, and Radial Velocities of Nebulae in NGC 147 and NGC 185", *ApJ*, 213, 18.
9. Ford, H.C., Jenner, D.C., & Epps, W.H. 1973, "Planetary Nebulae in Local Group Galaxies. I. Identifications in NGC 185, NGC 205, and NGC 221", *ApJ*, 183, L73.
10. Gallagher, J.S., & Hunter, D.A. 1981, "Dust Clouds in the Stellar Spheroids of Local Group Galaxies", *AJ*, 86, 1312.
11. Gallagher, III, J.S., Hunter, D.A., & Mould, J. 1984, "A Probable Supernova Remnant in the Dwarf Elliptical Galaxy NGC 185", *ApJ*, 281, L63.
12. Gottesman, S.T., & Johnson, D.W. 1983, "Neutral Hydrogen Observations of the Dwarf Elliptical Galaxies NGC 185 and NGC 205", in *Internal Kinematics and Dynamics of Galaxies*, IAU Symposium No. 100, edited by E. Athanassoula (Reidel, Dordrecht), p. 307.
13. Gregg, M.D. 1989, "Differential Population Synthesis of S0 Galaxies. I. The Data", *ApJS*, 69, 217.
14. Gregg, M.D. 1989, "Differential Population Synthesis of S0 Galaxies. II. Methods and Results", *ApJ*, 337, 45.
15. Held, E.V., de Zeeuw, T., Mould, J., & Picard, A. 1992, "Internal Dynamics of the Dwarf Elliptical NGC 185", *AJ*, 103, 851.
16. Ho, L.C., Filippenko, A.V., & Sargent, W.L.W. 1995, "A Search for 'Dwarf' Seyfert Nuclei. II. An Optical Spectral Atlas of the Nuclei of Nearby Galaxies", *ApJS*, 98, 477.
17. Hodge, P.W. 1963, "Distribution of Luminosity and Color in the Galaxy NGC 185", *AJ*, 68, 691.
18. Hodge, P.W. 1972, "The Population I Content of the Elliptical Companions of M31", in *External Galaxies and Quasi-Stellar Objects*, IAU Symposium No. 44, edited by D.S. Evans (Reidel, Dordrecht), p.46.
19. Hodge, P.W. 1974, "Photometry of the Globular Clusters in NGC 185", *PASP*, 86, 289.

20. Huchra, J.P., Brodie, J.P., Caldwell, N., Christian, C., & Schommer, R. 1996, "Extragalactic Globular Clusters. IV. The Data", *ApJS*, 102, 29.
21. Jenner, D.C., & Ford, H.C. 1978, "Chemical Abundances of Planetary Nebulae in NGC 185, 205, and 221", in *Planetary Nebulae: Observations and Theory*, IAU Symposium No. 76, edited by Y. Terzian (Reidel, Dordrecht), p. 246.
22. Johnson, D.W., & Gottesman, S.T. 1979, "Carbon Monoxide Observations of Early Type Galaxies", in *Photometry, Kinematics, and Dynamics of Galaxies*, edited by D.S. Evans (University of Texas, Austin), p. 57.
23. Johnson, D.W., & Gottesman, S.T. 1983, "VLA Observations of the Neutral Hydrogen Content of NGC 185 and 205", *ApJ*, 275, 549.
24. Kent, S.M. 1987, "Surface Photometry of Six Local Group Galaxies", *AJ*, 94, 306.
25. Kron, G.E., & Mayall, N.U. 1960, "Photoelectric Photometry of Galactic and Extragalactic Star Clusters", *AJ*, 65, 581.
26. Lee, M.G., Freedman, W.L., & Madore, B.F. 1993, "Stellar Populations in the Dwarf Elliptical Galaxy NGC 185", *AJ*, 106, 964.
27. Maoz, D., Filippenko, A.V., Ho, L.C., Macchetto, F.D., Rix, H.-W., & Schneider, D.P. 1996, "An Atlas of *Hubble Space Telescope* Ultraviolet Images of Nearby Galaxies", *ApJS*, 107, 215.
28. Price, J.S. 1985, "Optical and 2 Micron Surface Photometry of NGC 185", *ApJ*, 297, 652.
29. Richer, M.G., & McCall, M.L. 1995, "Oxygen Abundances in Diffuse Ellipticals and the Metallicity-Luminosity Relations for Dwarf Galaxies", *ApJ*, 445, 642.
30. Saha, A., & Hoessel, J.G. 1990, "RR Lyrae Stars in Local Group Galaxies. I. NGC 185", *AJ*, 99, 97.
31. Sharov, A.S., & Lyuty, V.M. 1983, "Photoelectric Catalogue of Globular Clusters in the Andromeda Nebula M31 and its Companions NGC 147, NGC 185, and NGC 205", *Ap&SS*, 90, 371.
32. Sitko, M.L. 1984, "Infrared Photometry of Globular Clusters in M31", *ApJ*, 286, 209.
33. Sofue, Y., & Wakamatsu, K. 1993, "CO in Elliptical Galaxies and the Universal CO-to-Dust Ratio", *PASJ*, 45, 529.
34. Welch, G.A., Mitchell, G.F., & Yi, S. 1996, "Observations of Molecular Gas in the Dwarf Elliptical Galaxy NGC 185", *ApJ*, 470, 781.
35. Wiklind, T., & Henkel, C. 1995, "Cold Dust in Elliptical Galaxies", *A&A*, 297, L71.
36. Wiklind, T., & Rydbeck, G. 1986, "Detection of CO ($J=1-0$) in the Dwarf Elliptical Galaxy NGC 185", *A&A*, 164, L22.
37. Wiklind, T., & Rydbeck, G. 1986, "Detection of CO ($J=1-0$) in the Dwarf Elliptical Galaxy NGC 185", in *Star Formation in Galaxies*, NAS Conference Publication 2466, edited by C.J. Lonsdale Persson (NASA Office of Space Science & Applications, Washington), p. 331.
38. Young, L.M., & Lo, K.Y. 1997, "The Neutral Interstellar Medium in Nearby Dwarf Galaxies. II. NGC 185, NGC 205, and NGC 147", *ApJ*, 476, 127.

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NGC 6822

Alternate name(s): DDO 209

Right Ascension (2000): 19h 44m 56s

Declination (2000): -14d 48.1 m

Type: dIrr

Apparent magnitude (V): 9.31

Color (B-V): 0.71

(U-B): 0.41

(V-R):

Color Excess, E(B-V): 0.26

Absolute magnitude (M_V): -14.9

Distance (kpc): 490

Radial velocity (solar, km/sec): -53

Objects Identified On the Atlas:

Globular clusters: 4; designation: H + Roman numeral

Source: [43]

Open clusters: 26; designation: C

Source: [36]

OB associations: 16; designation: A

Source: [36]

Variable stars: 34; designation: V

Source: [43], [51]

Wolf-Rayet stars: 12; designation: WR

Source: [5]

HII regions: 142; designation: H + Roman numeral, Ho, K + Greek letter, KD, HK

Source: [39]

Planetary nebulae and emission-line stars: 19; designation: KDe

Source: [53]

Dust clouds: 11; designation: Arabic numeral (triangles on Chart 171 are probable background galaxies)

Source: [36]

Table 6. NGC 6822 Emission Regions^a

ID	Other names	Chart
H I	Ho 2, KD 1	158
H II	Ho 3, KD 2	161
H III	Ho 4, KD 4	158
H V	Ho 9, Ho 11, KD 19	160
H X	Ho 14, KD 26	159
Ho 1	KD 3	161
Ho 5	KD 7	169
Ho 6	KD 10	160
Ho 7	KD 11	163
Ho 8	KD 16, KD 17	168
Ho 10	KD 18	168
Ho 12	KD 23	165
Ho 15	KD 30	164
Ho 16	KD 31	162
K□	KD 2e	166
K□	KD 5e	166
K□	KD 11e	168
KD 5	Part of H III	158
KD 6	Part of H III	158
KD 8	--	169
KD 9	--	160
KD 12	--	160
KD 13	--	168
KD 14	--	168
KD 15	--	168
KD 17	--	168
KD 20	--	165
KD 21	--	160
KD 22	--	167
KD 24	--	165
KD 27	--	170
KD 28	--	170
KD 29	--	164

KD 9e	Part of Ho V	169
KD 12e	Part of KD 12	160
KD 13e	--	168
KD 15e	Part of KD 13	168
KD 17e	Part of KD 14	168
KD 20e	Part of Ho 8	168
KD 22e	Part of H V	160
KD 34e	Part of Ho 15	164
KD 36e	--	162
HK 1	--	166
HK 2	--	161
HK 3	--	158
HK 4	--	161
HK 5	--	158
HK 6	--	169
HK 7	--	169
HK 8	--	169
HK 9	--	169
HK 11	--	163
HK 12	--	163
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HK 62	--	160
HK 63	--	165
HK 64	--	160

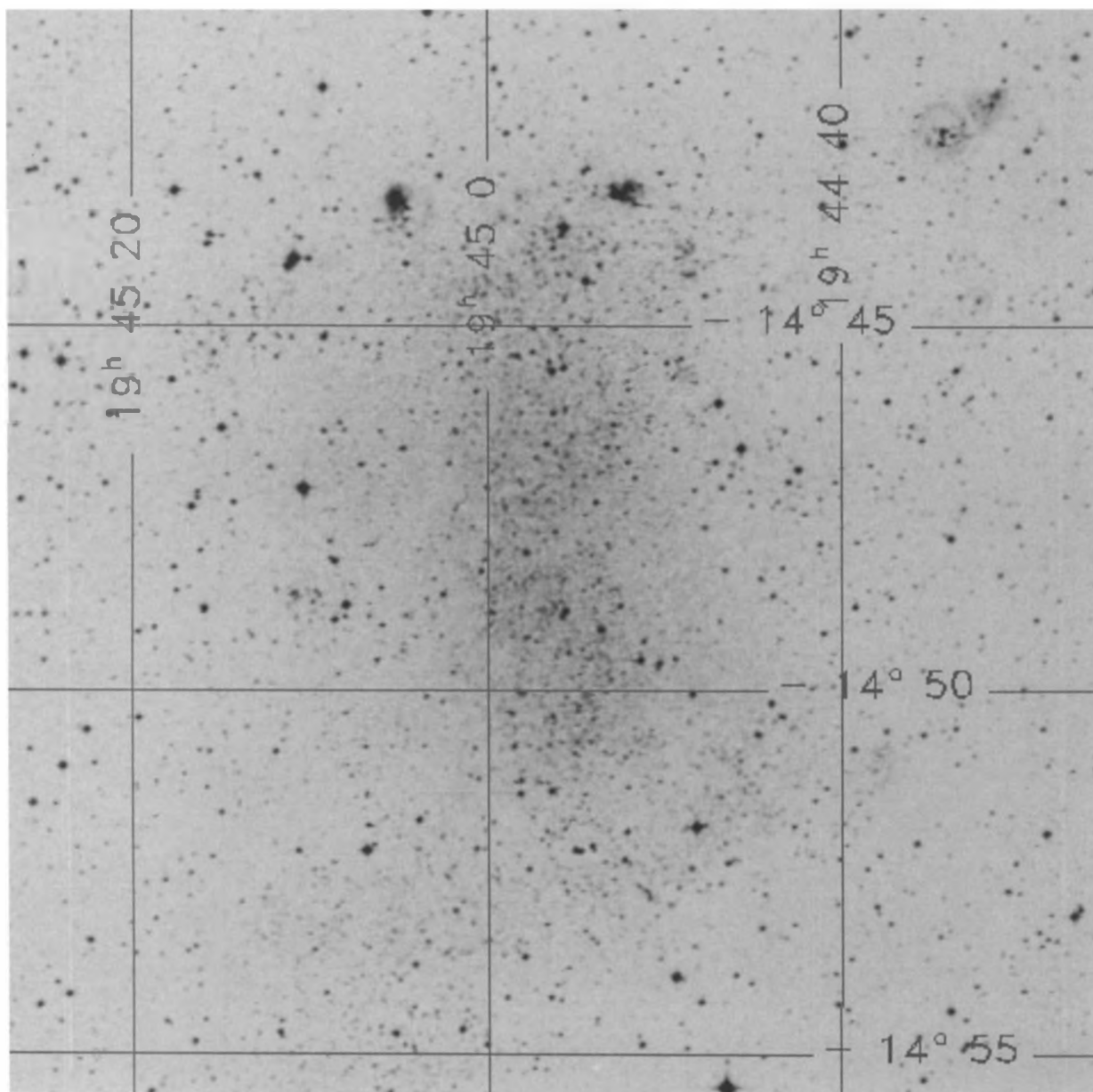
HK 65	--	165
HK 66	--	165
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HK 68	--	159
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HK 95	--	170
HK 96	--	162
HK 97	--	162
HK 98	--	162
HK 99	--	164

HK 100	--	162
HK 101	--	162
HK 102	--	162
HK 103	--	162
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HK 107	--	162
HK 108	--	162
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HK 110	--	160

^aDesignations: H: reference 43; Ho: reference 35; K: reference 54; KD: reference 53; KDe: unresolved emission regions from reference 53; HK: reference 39.

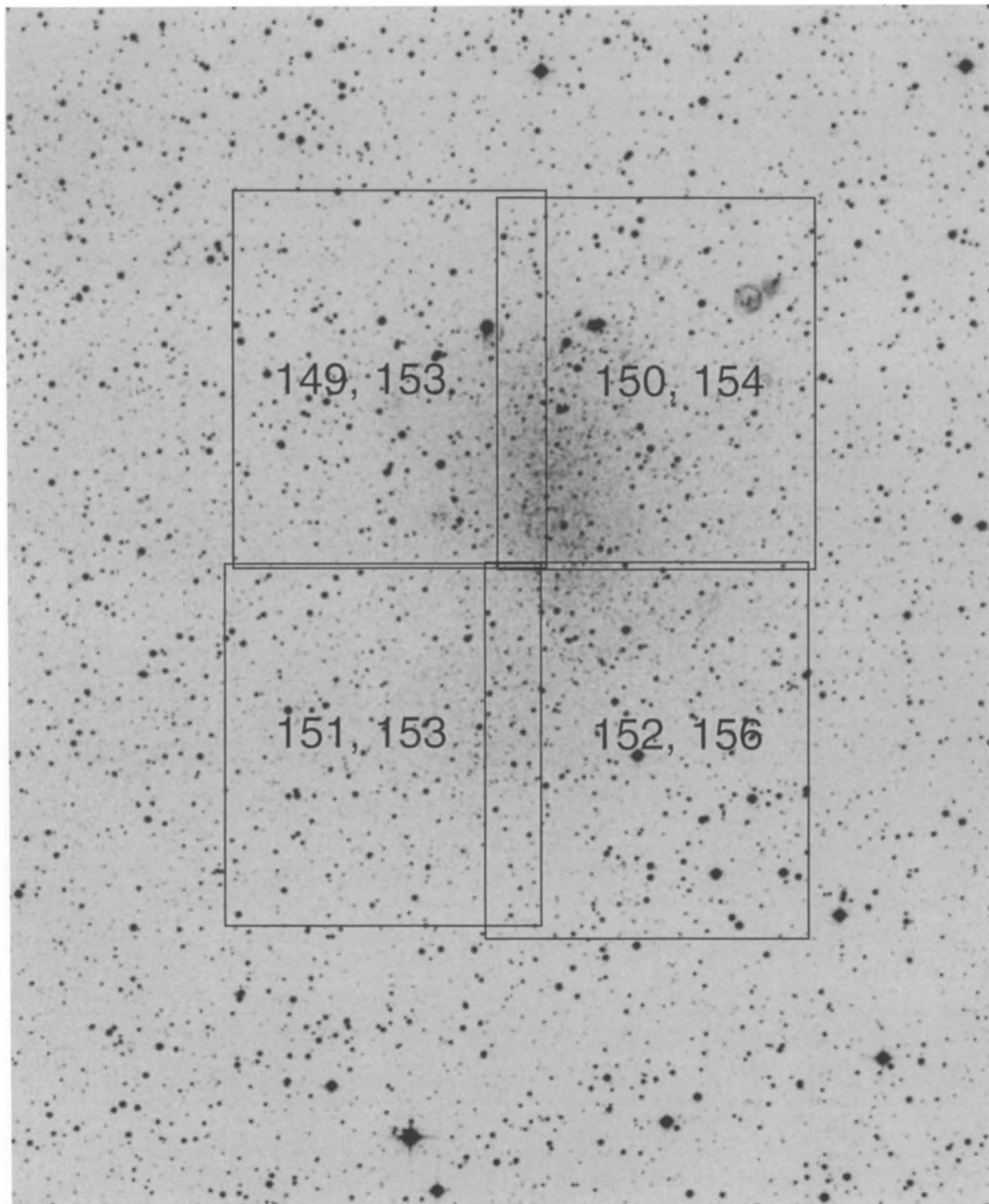
NGC 6822

Chart 147



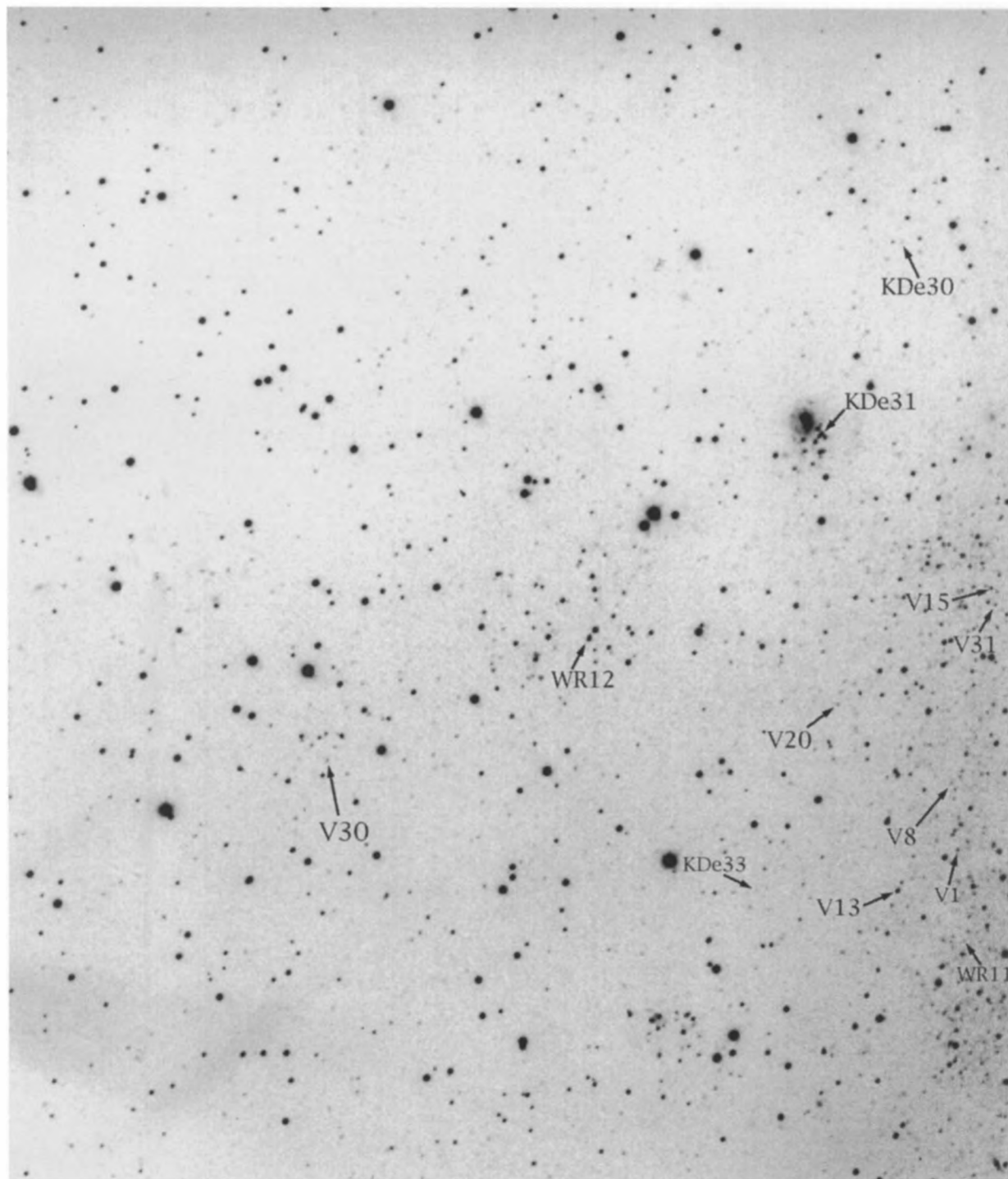
NGC 6822

Chart 148



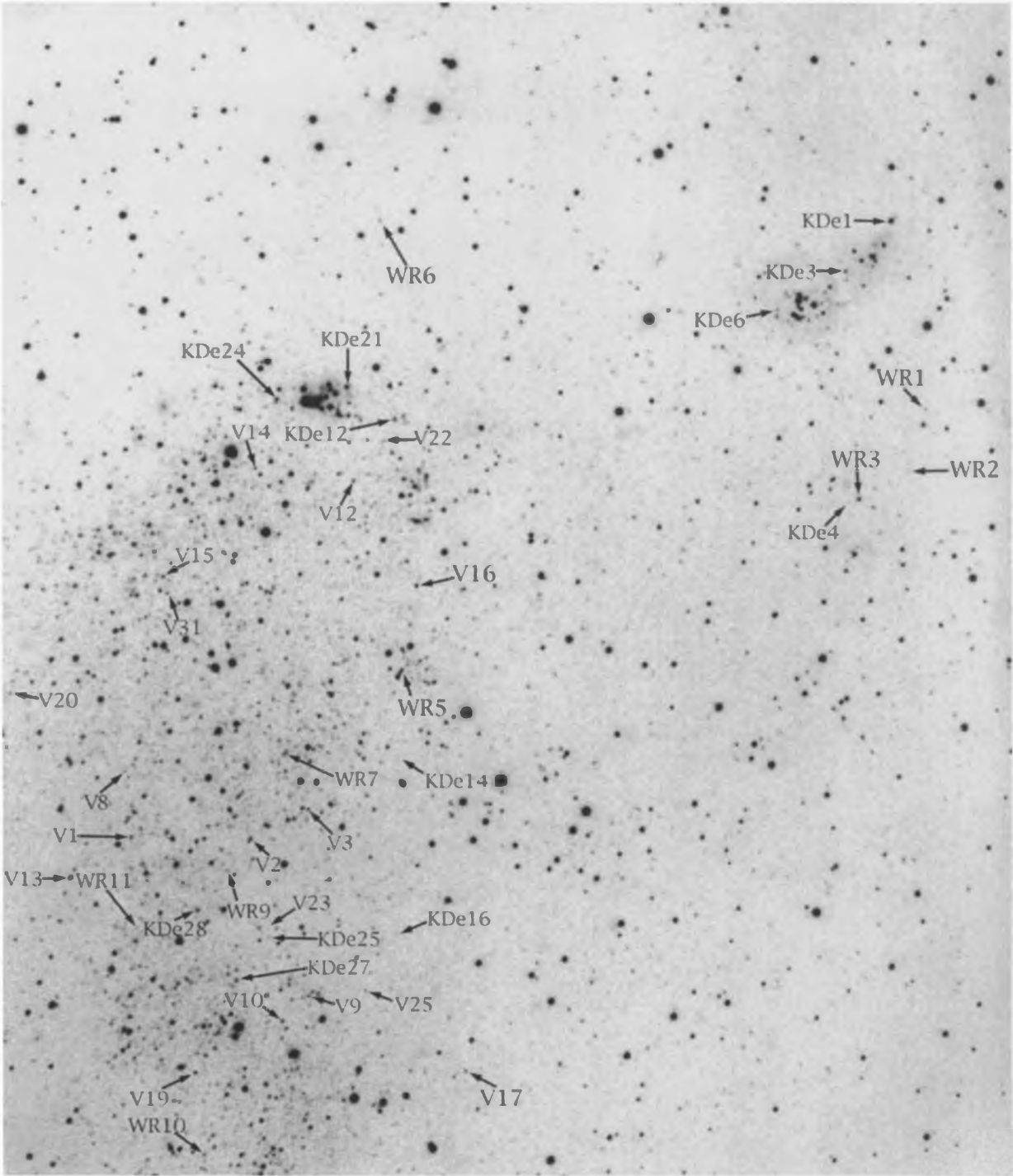
NGC 6822

Chart 149



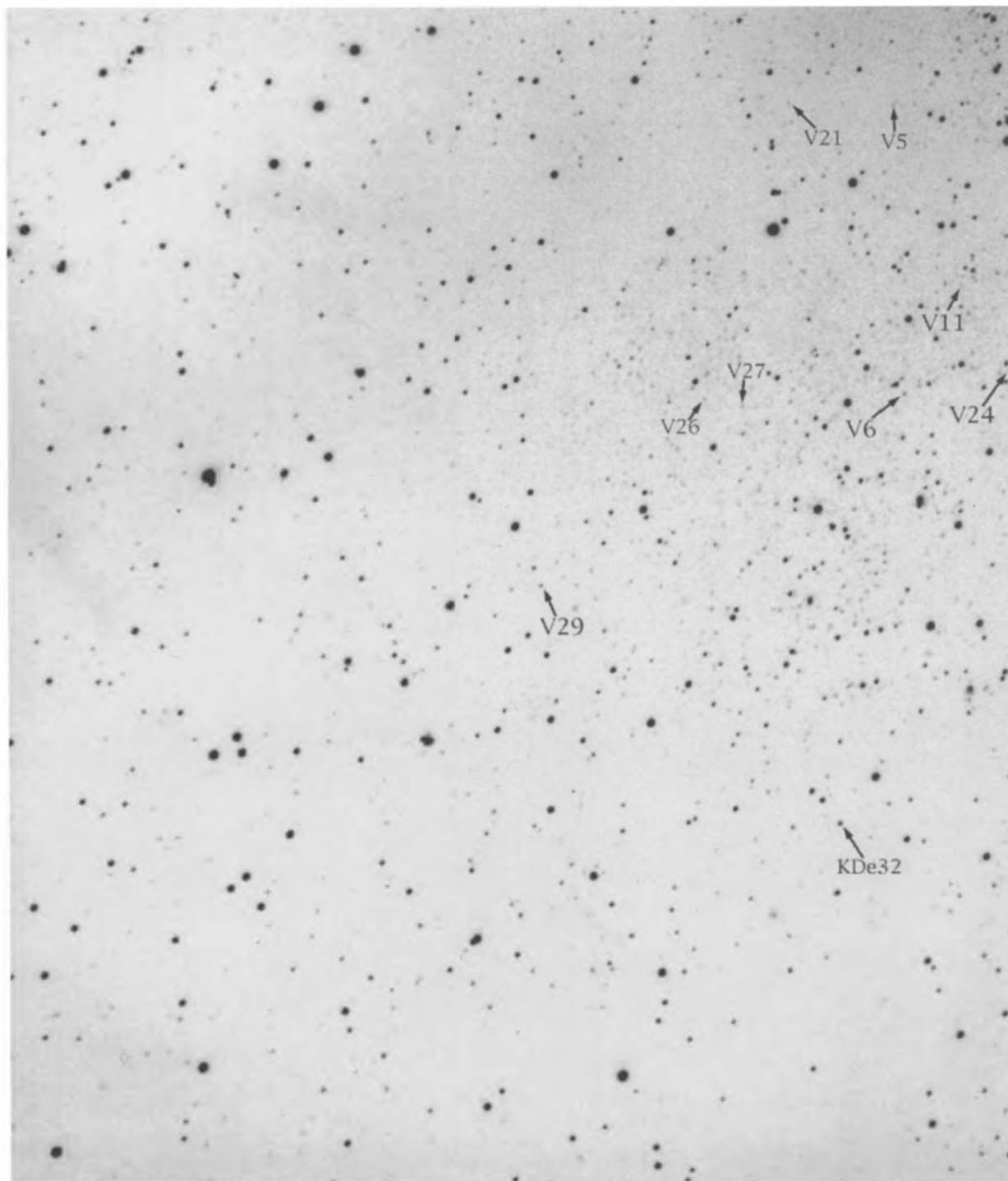
NGC 6822

Chart 150



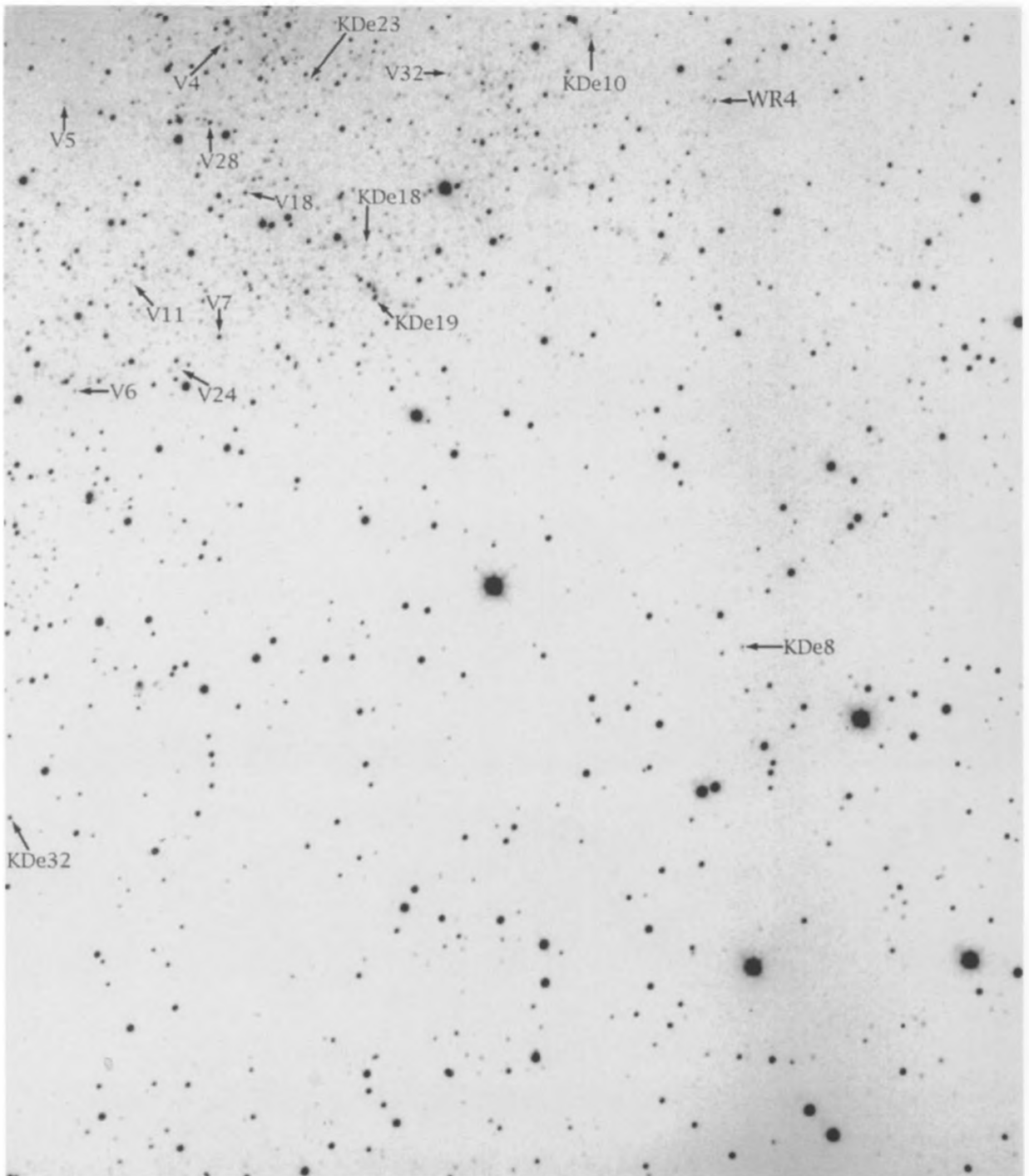
NGC 6822

Chart 151



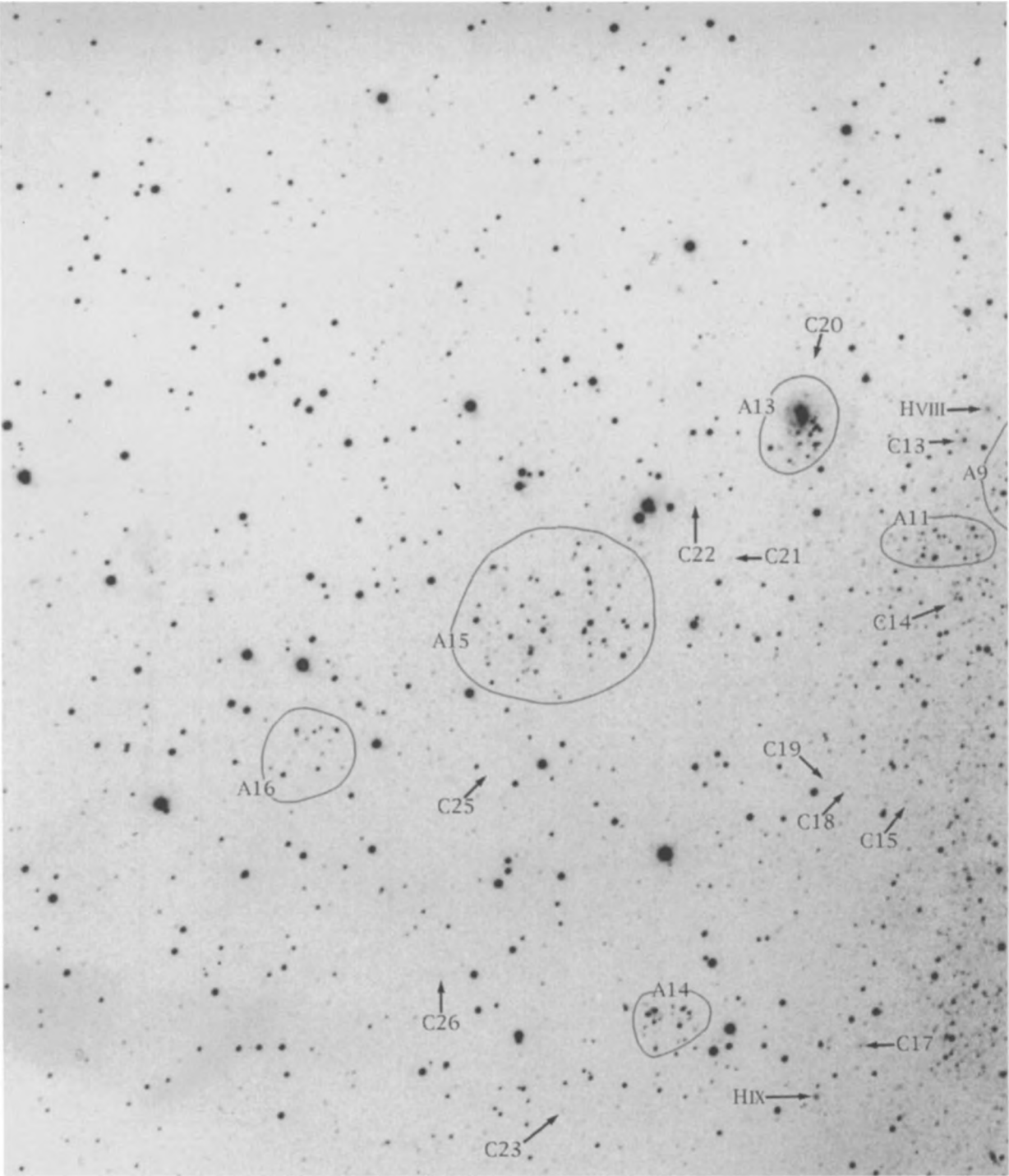
NGC 6822

Chart 152



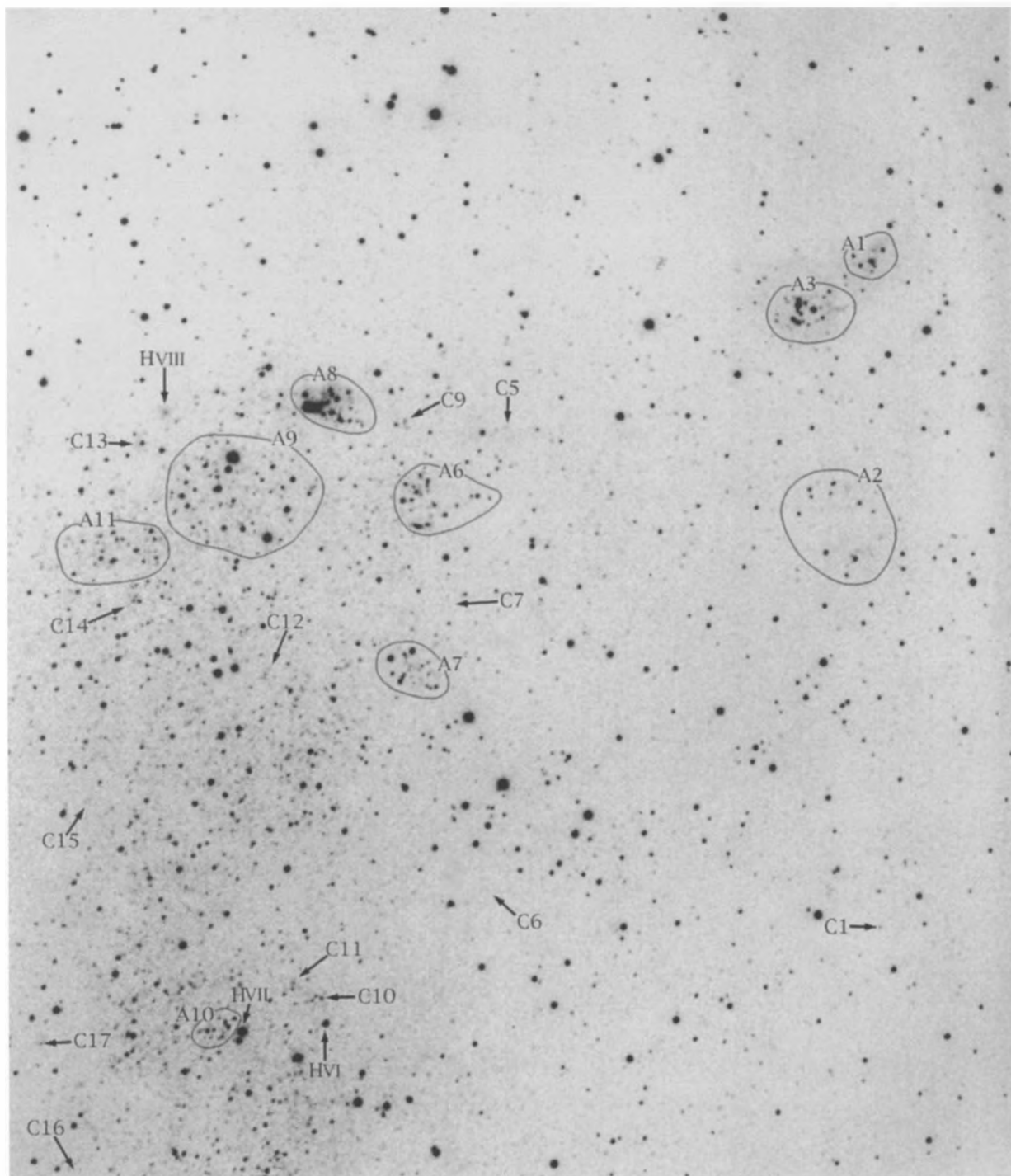
NGC 6822

Chart 153



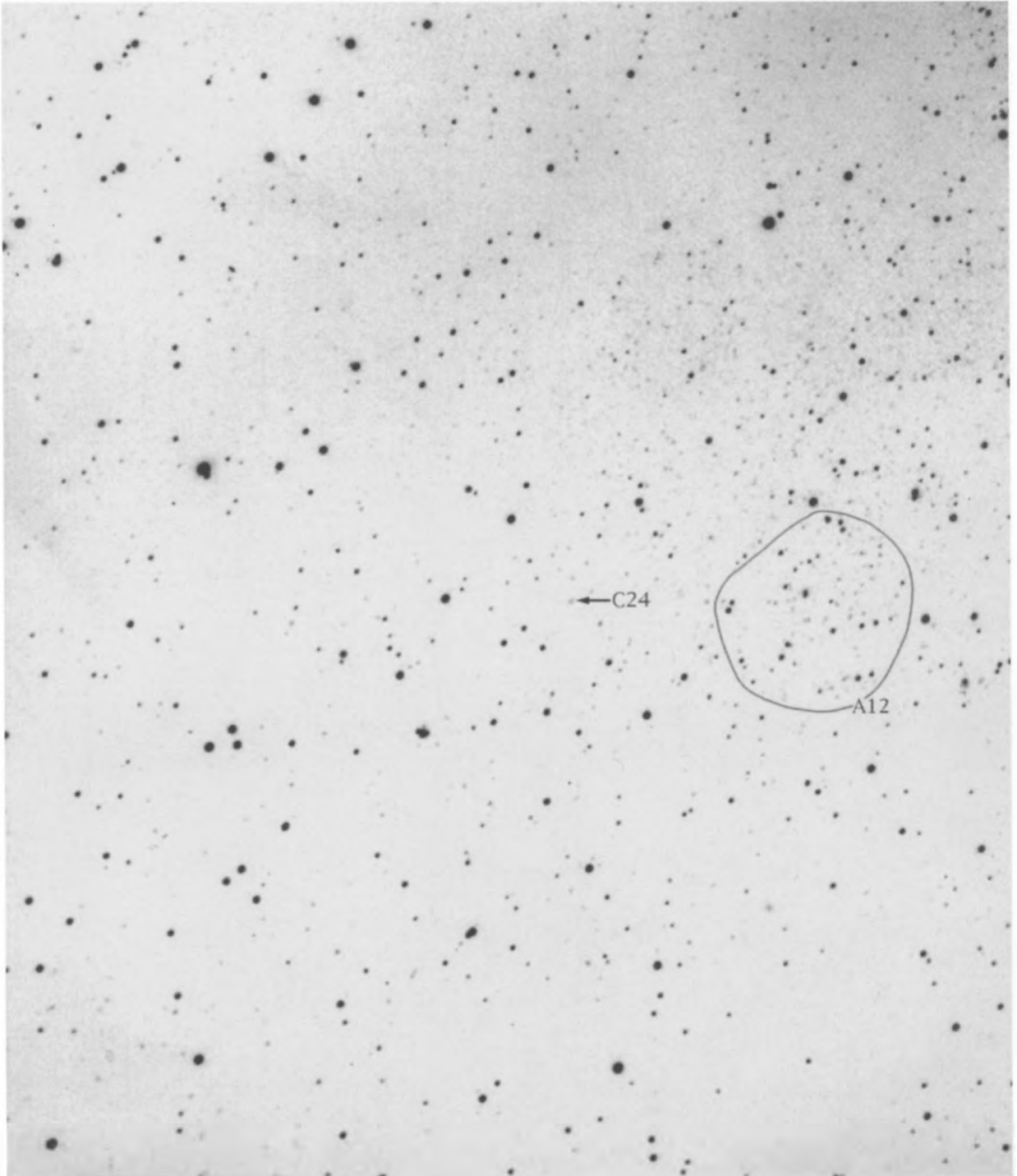
NGC 6822

Chart 154



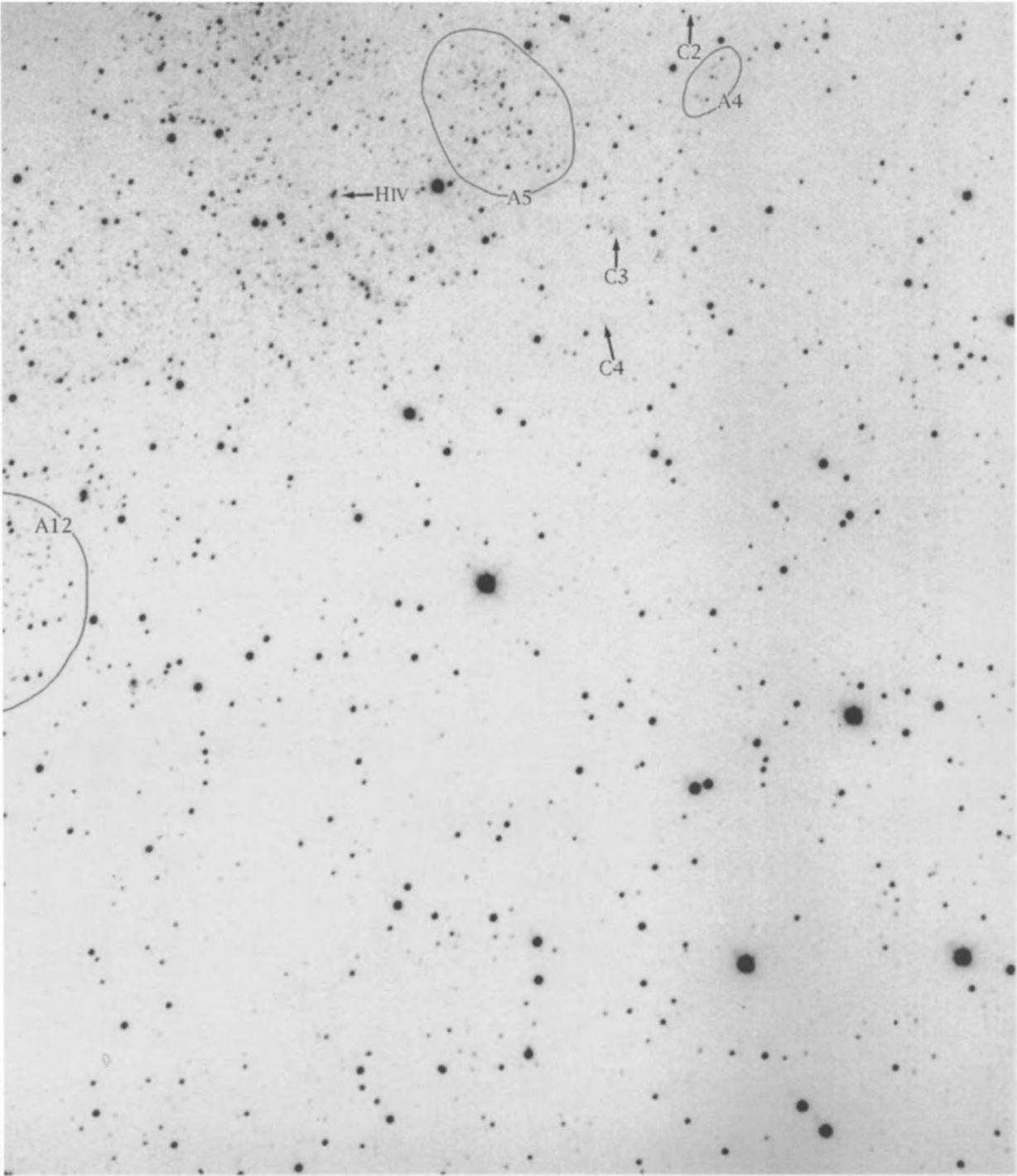
NGC 6822

Chart 155



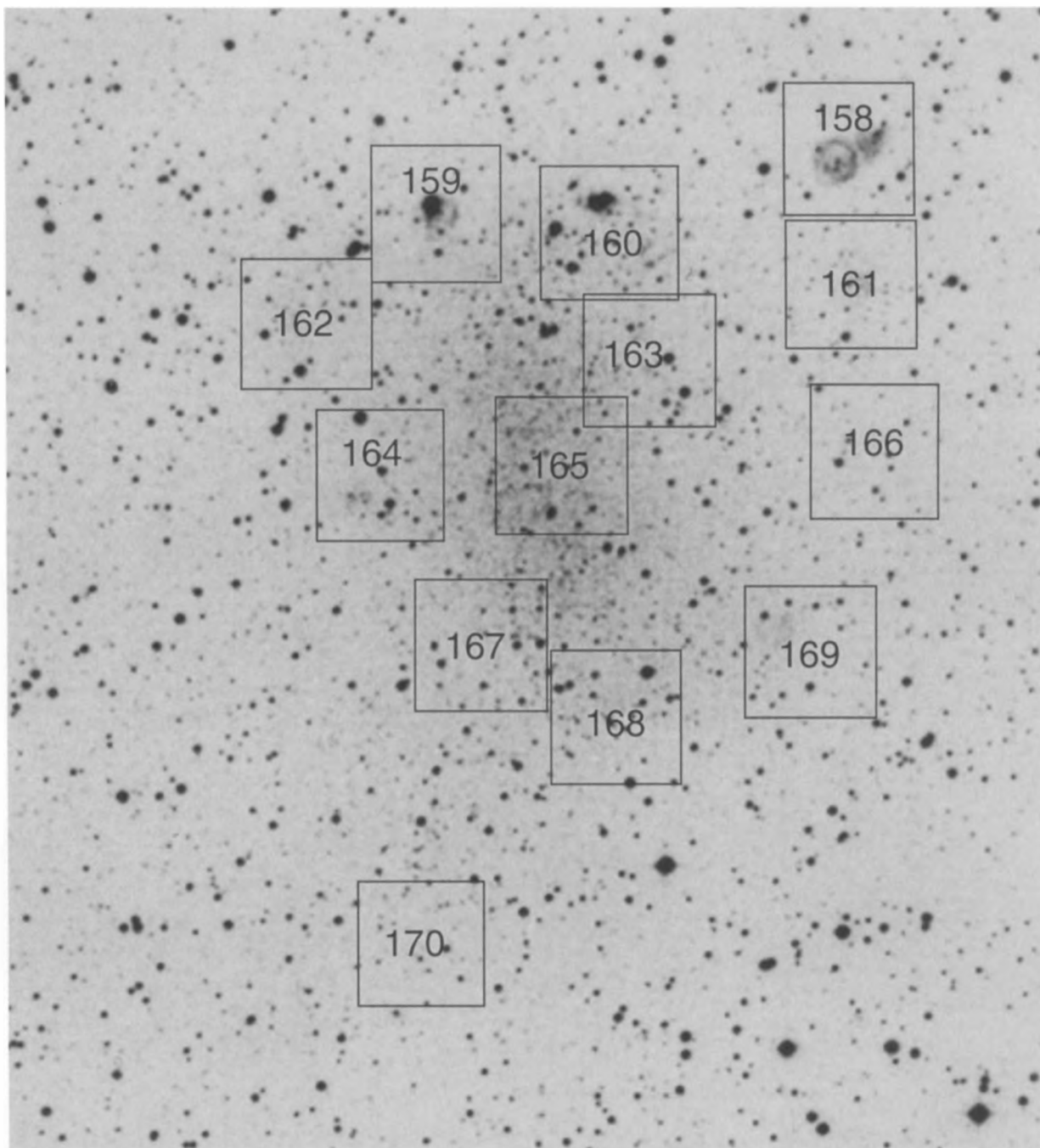
NGC 6822

Chart 156



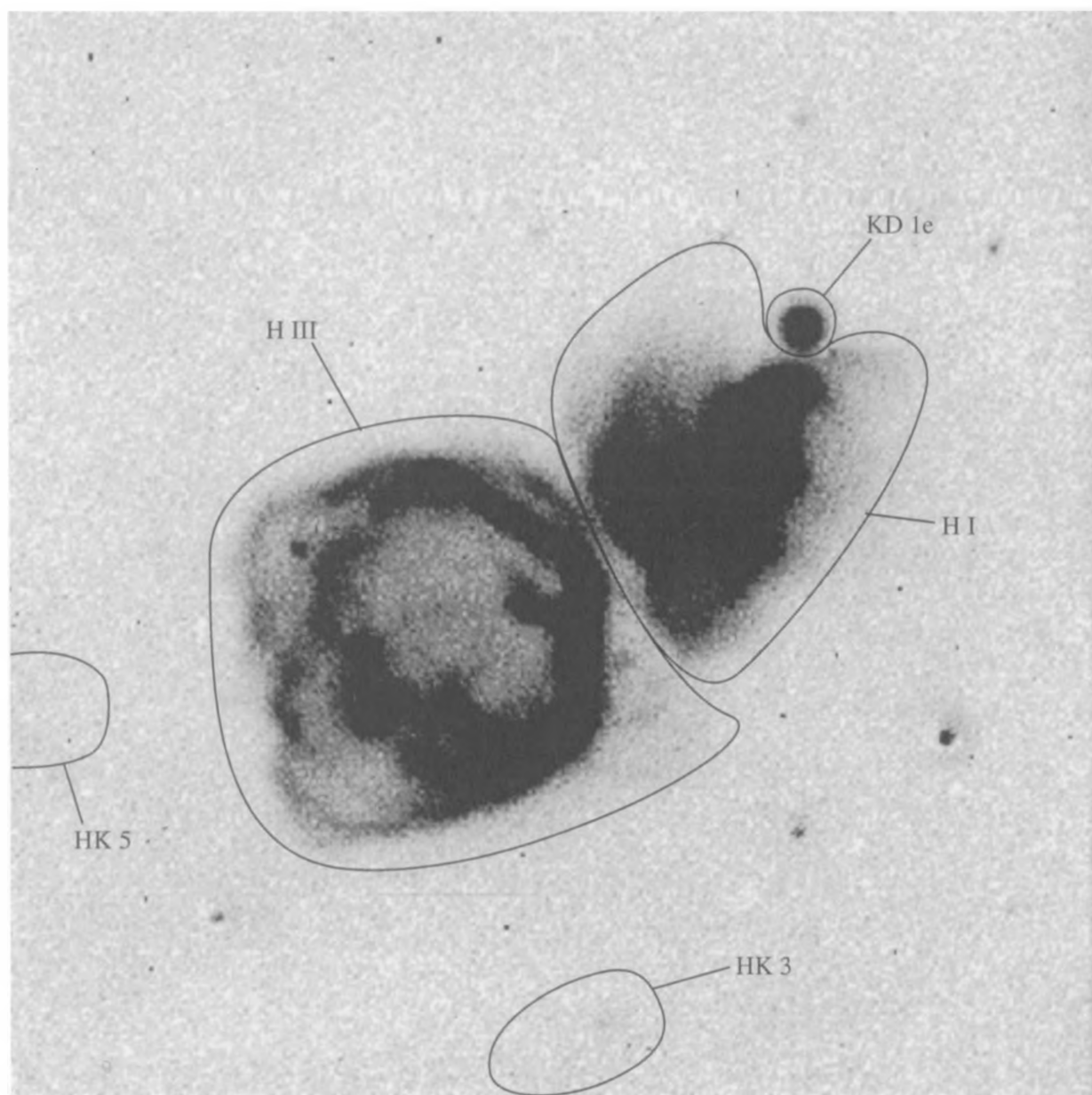
NGC 6822

Chart 157



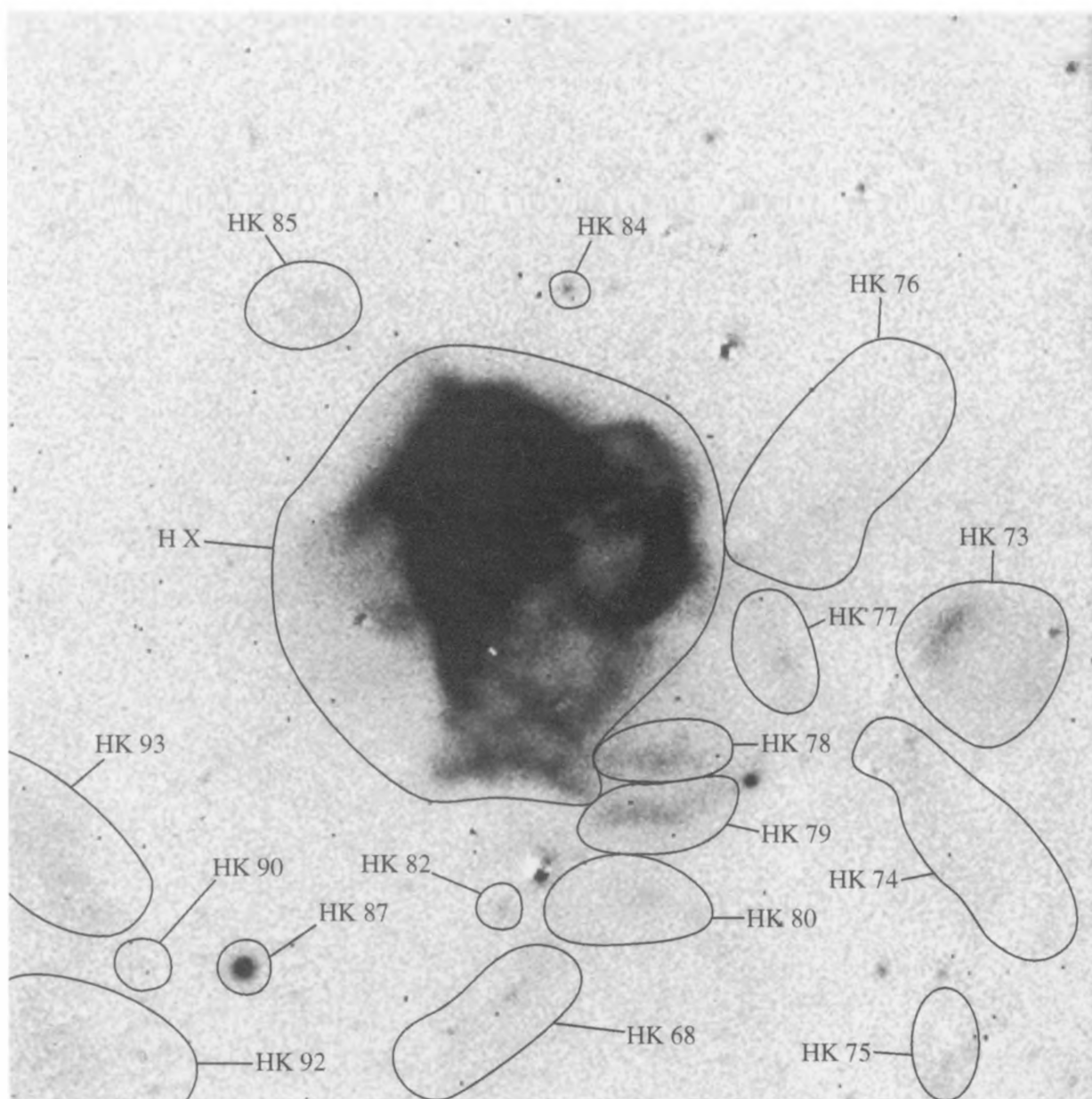
NGC 6822

Chart 158



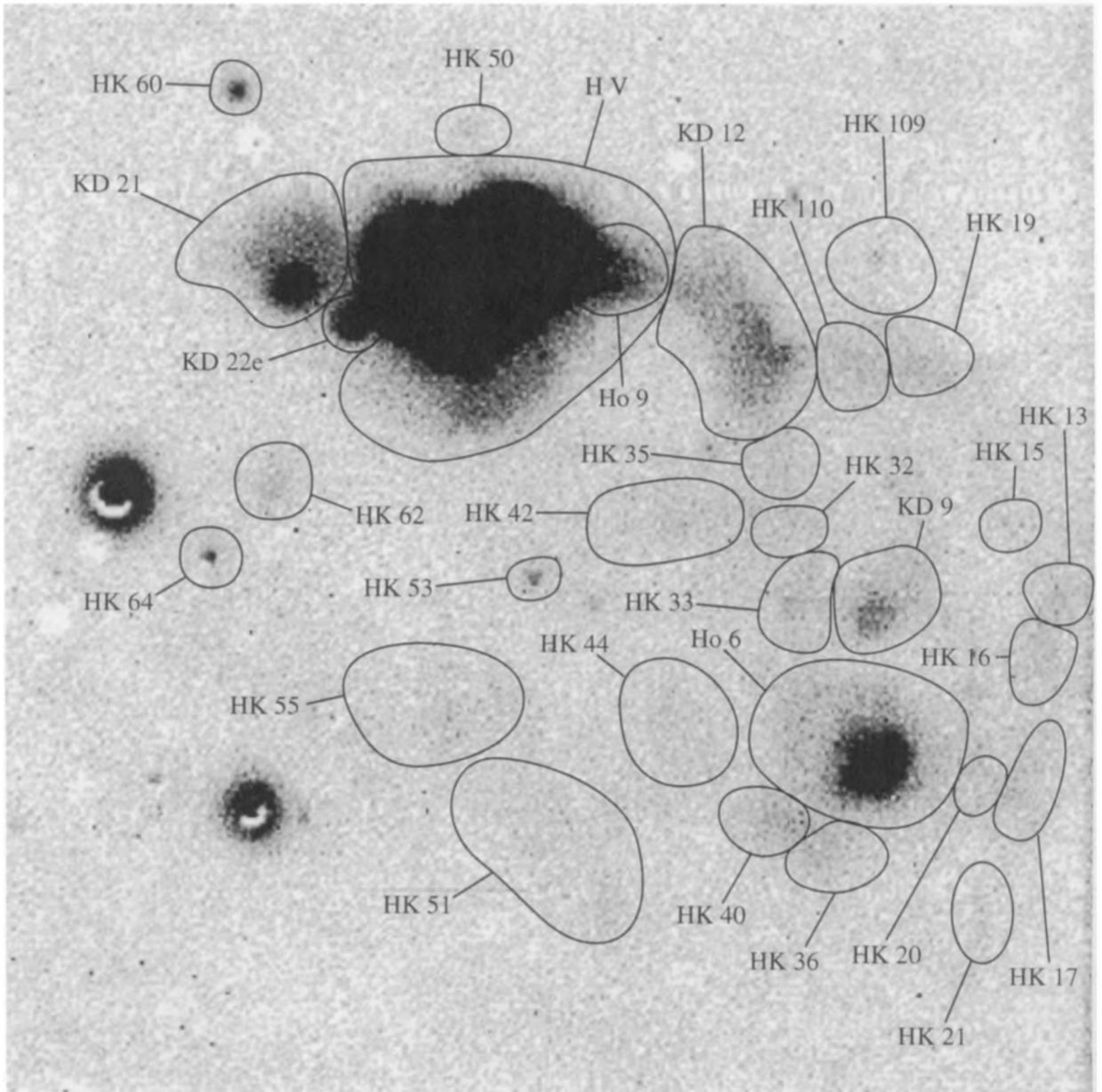
NGC 6822

Chart 159



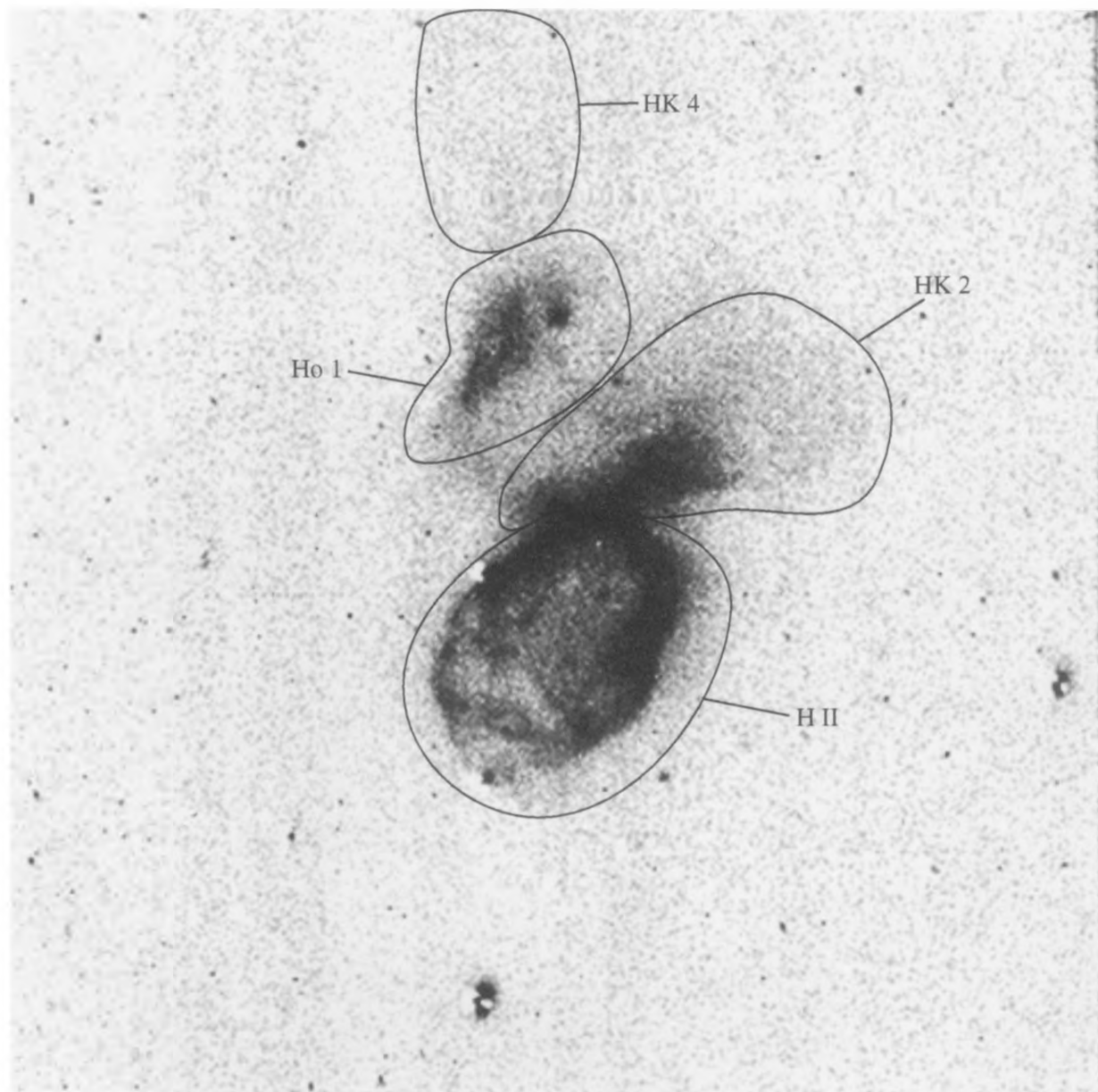
NGC 6822

Chart 160



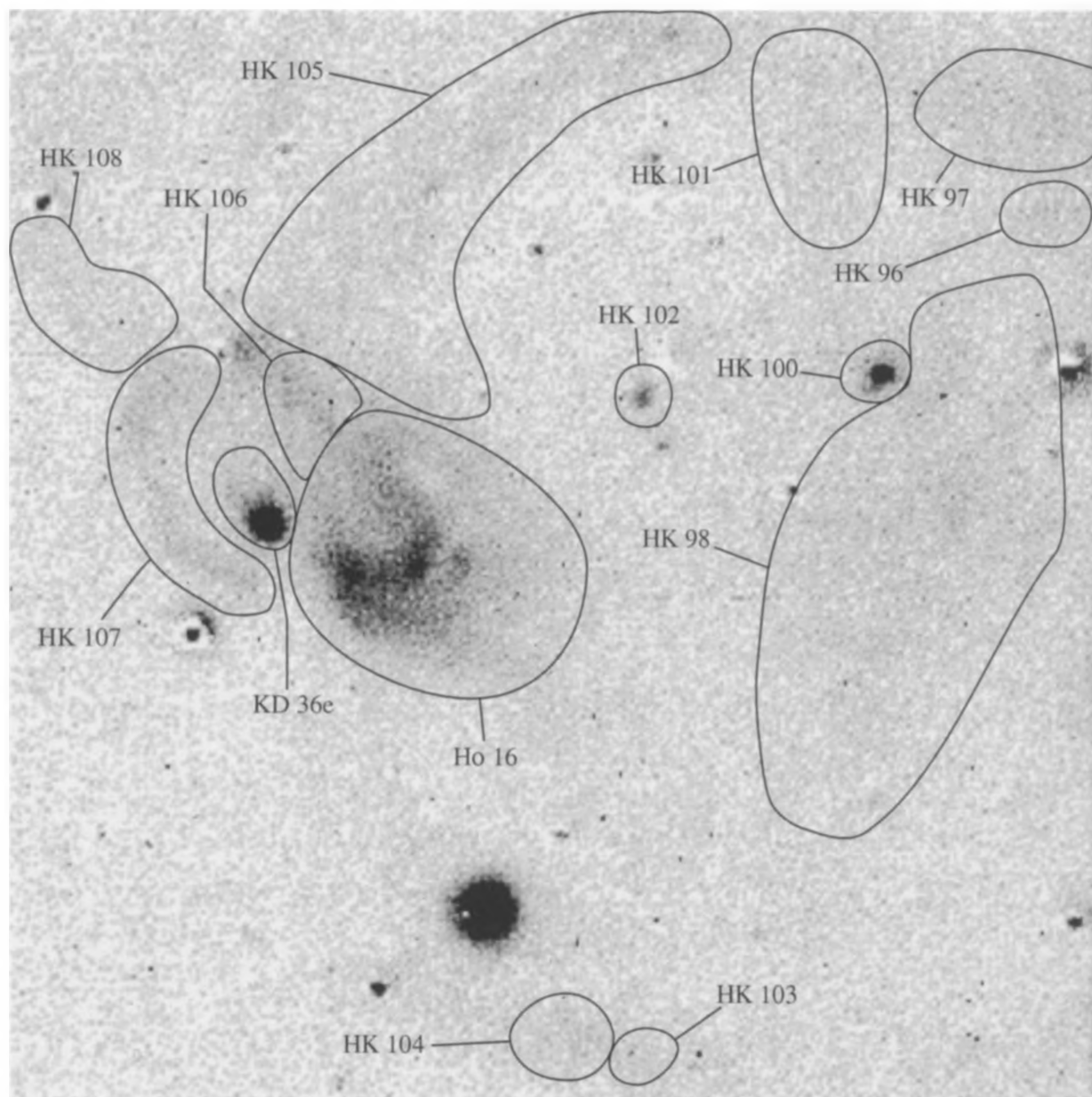
NGC 6822

Chart 161



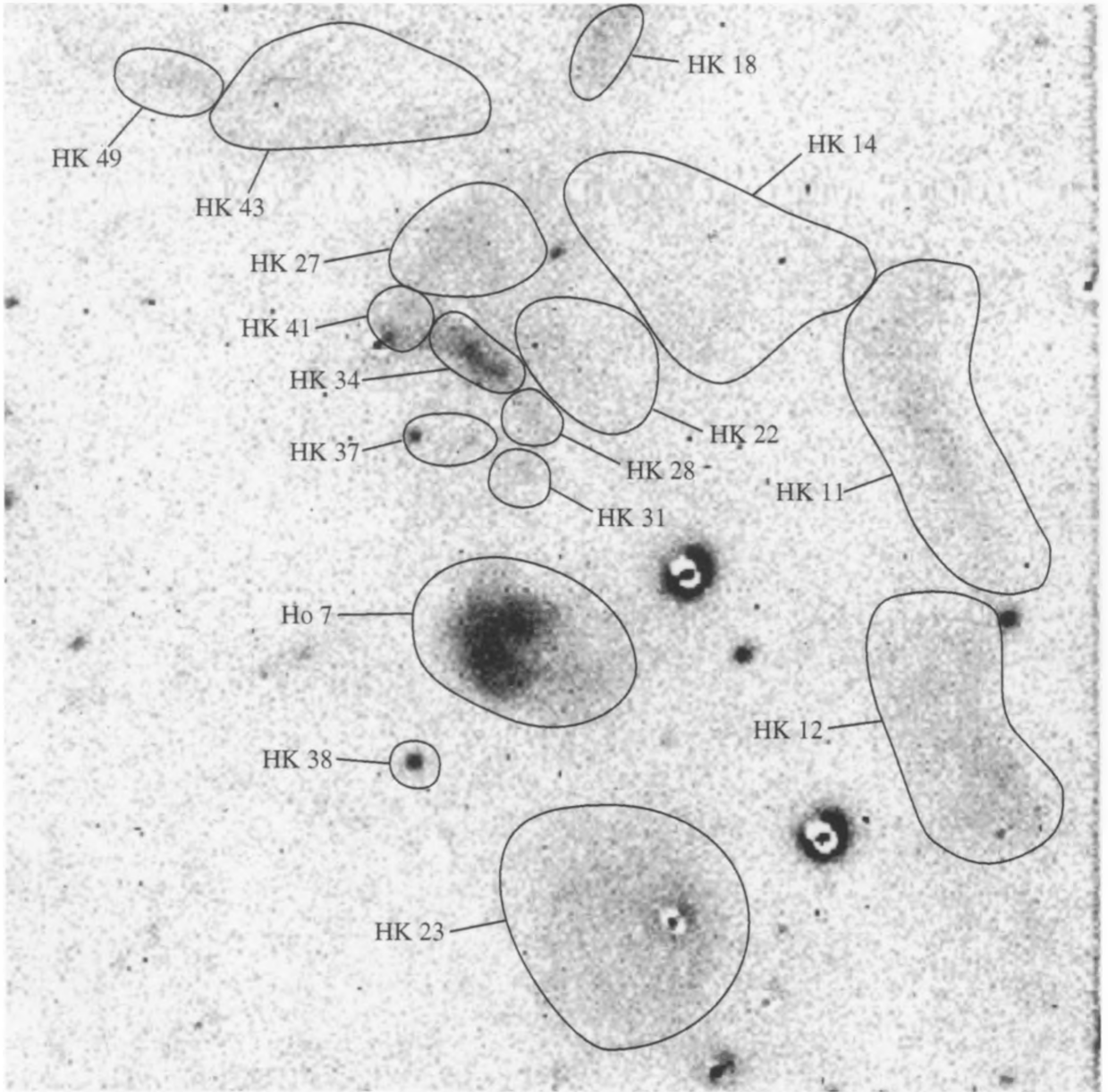
NGC 6822

Chart 162



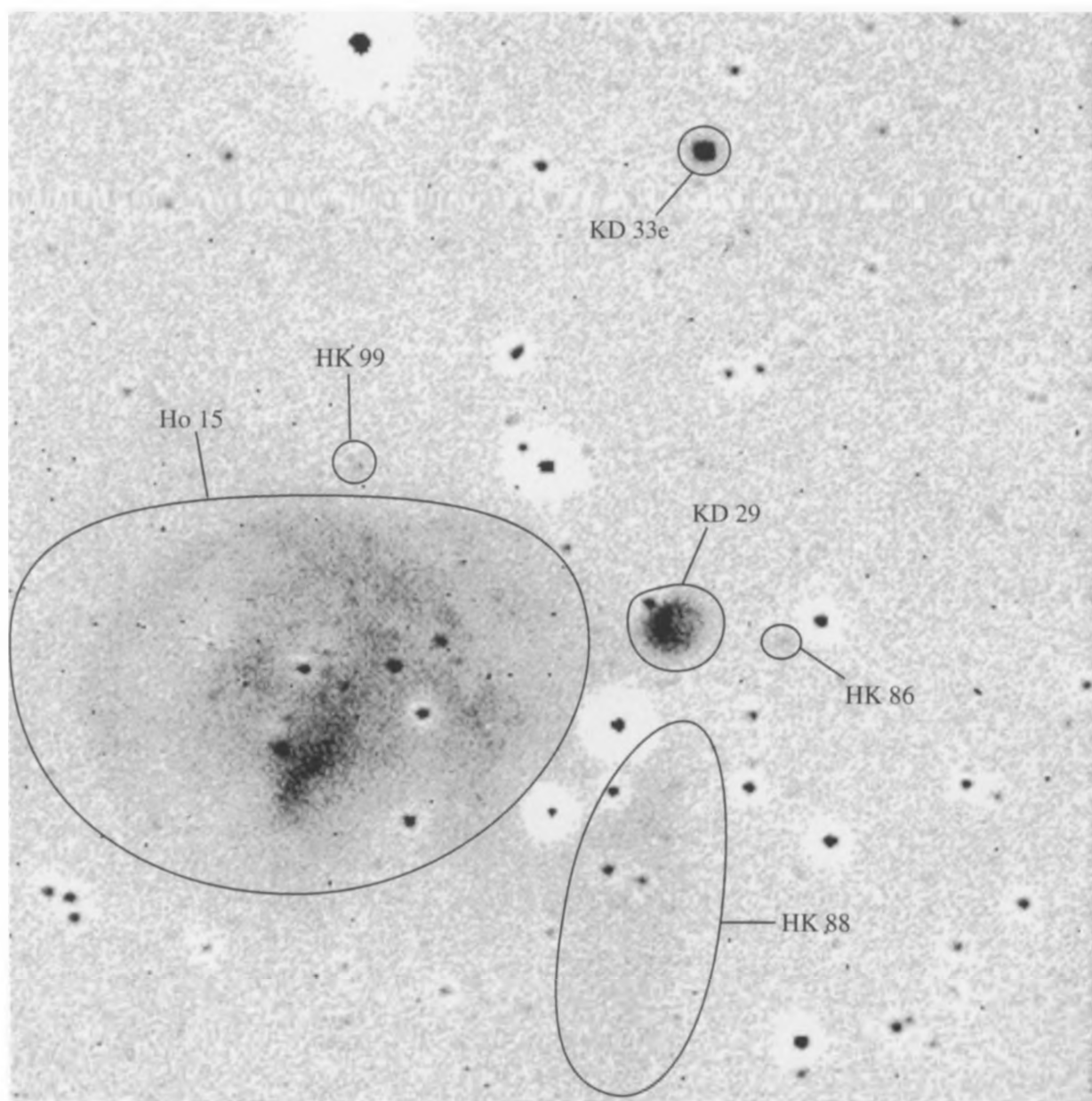
NGC 6822

Chart 163



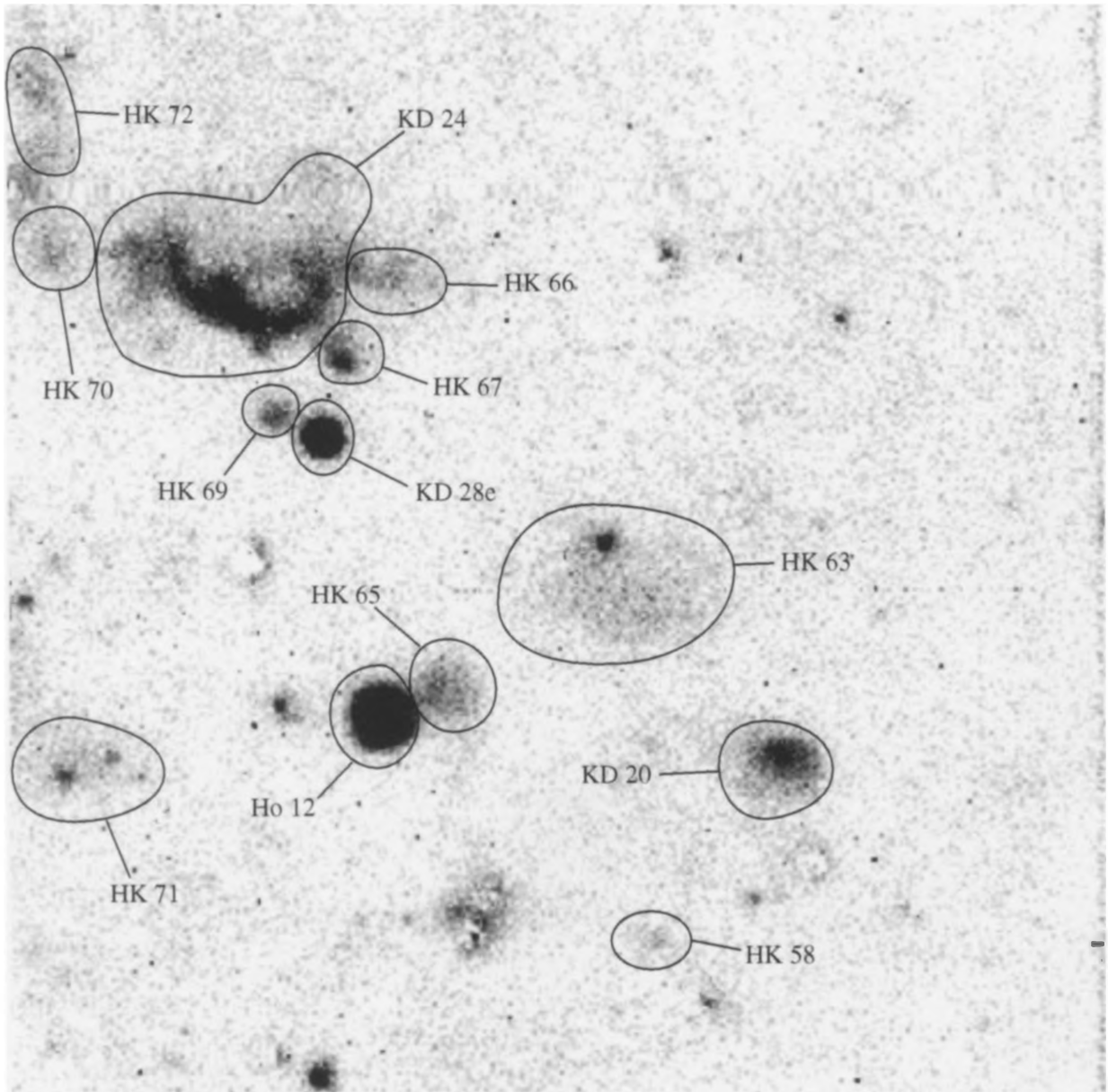
NGC 6822

Chart 164



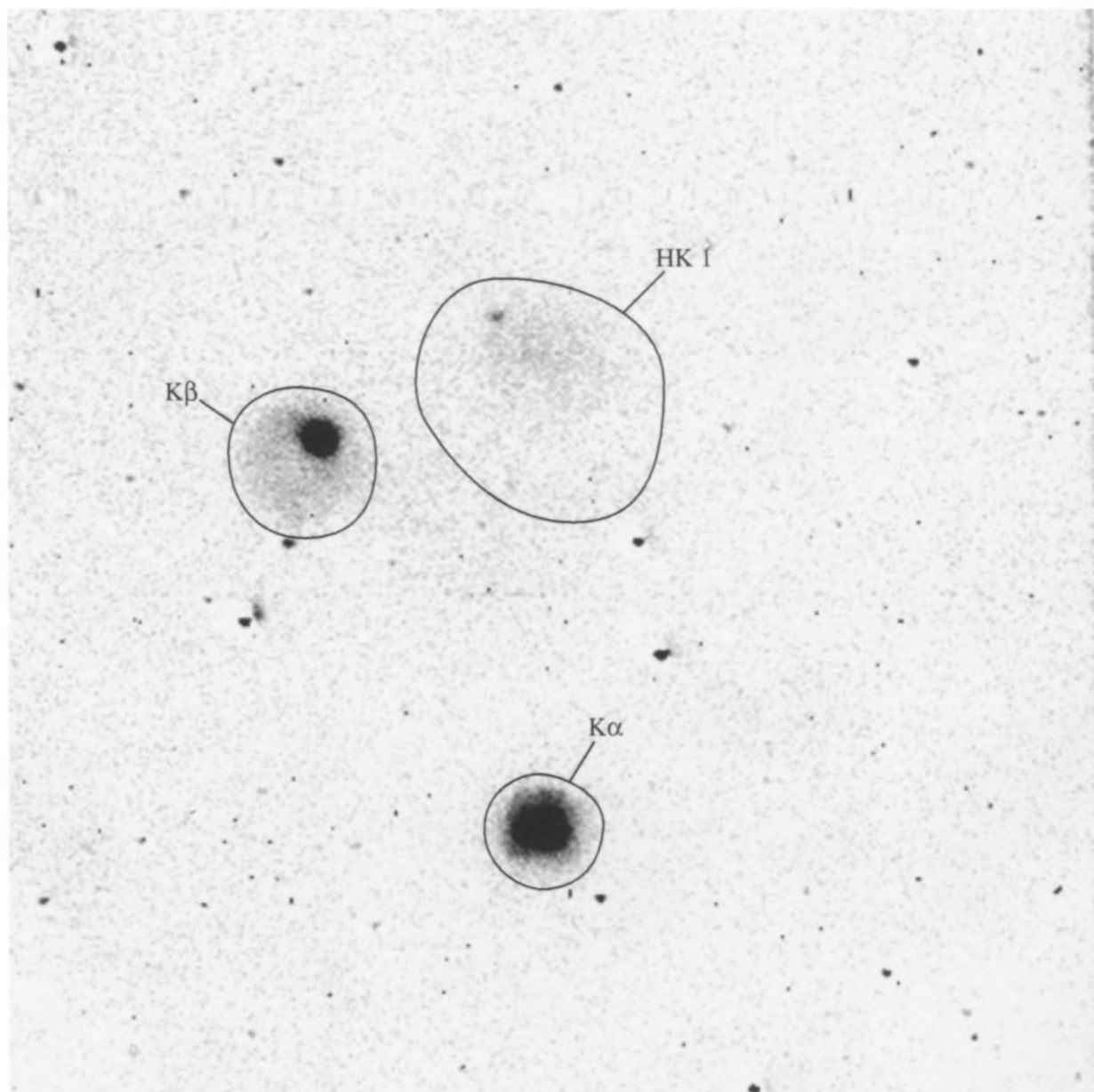
NGC 6822

Chart 165



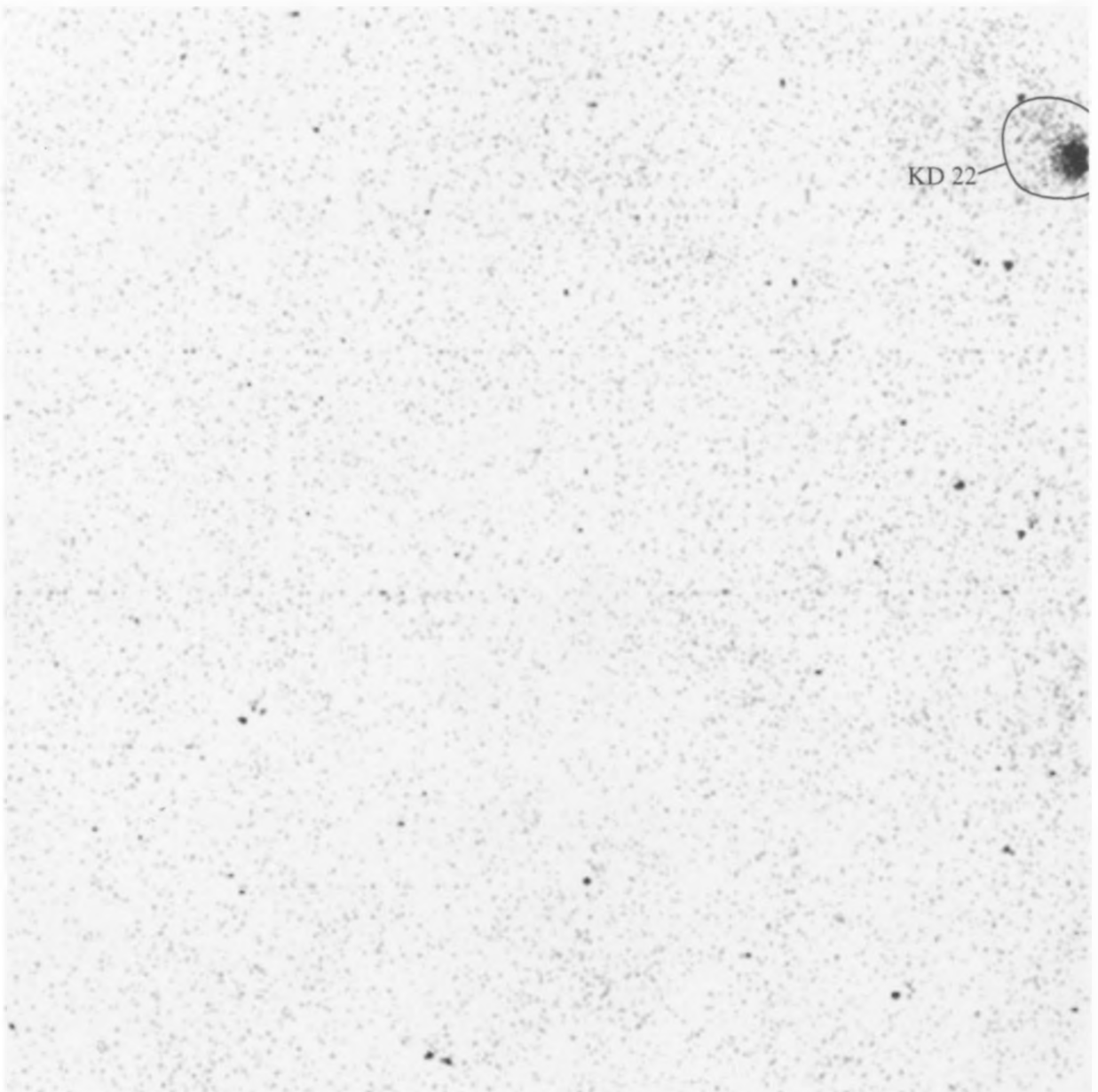
NGC 6822

Chart 166



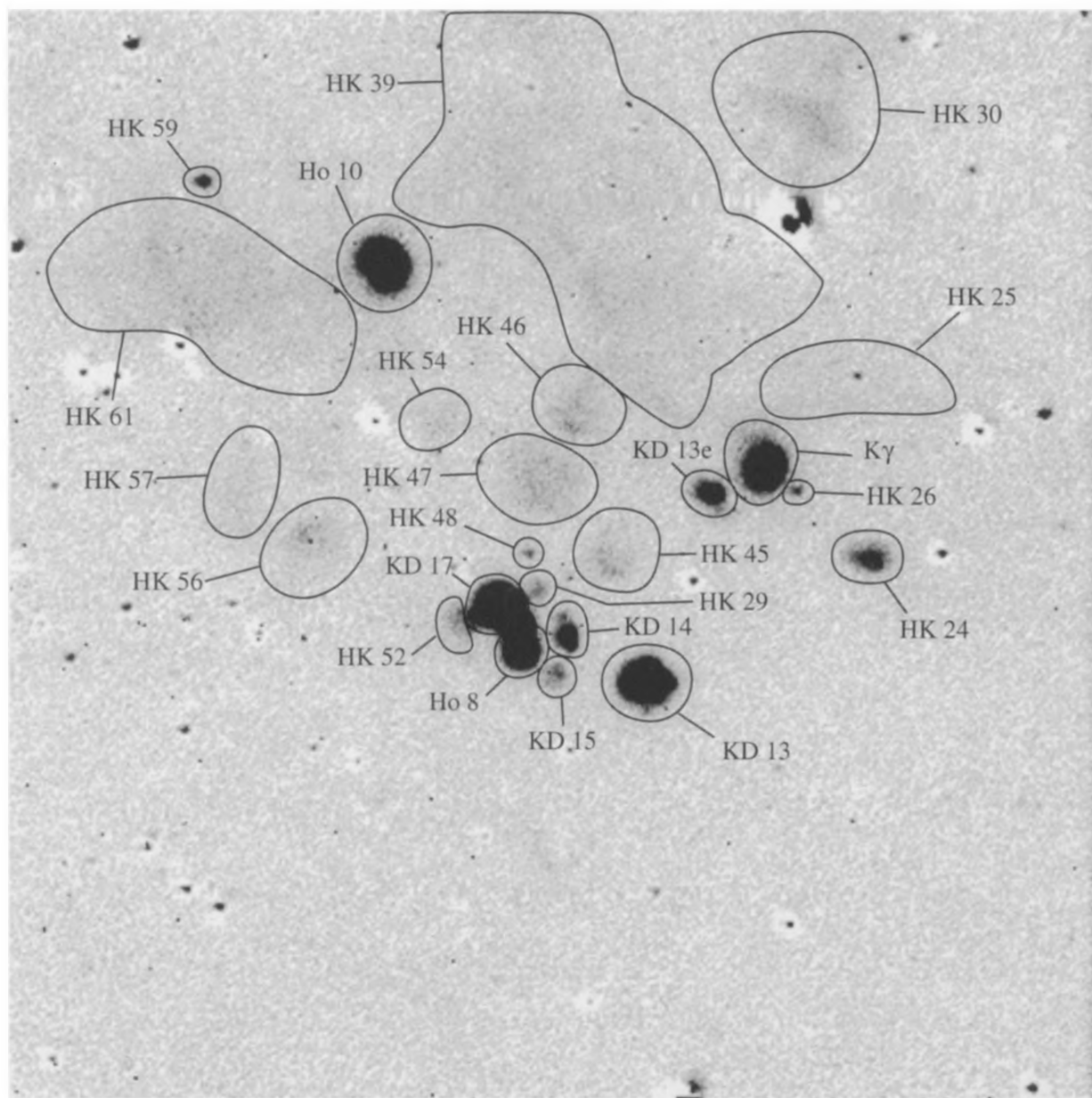
NGC 6822

Chart 167



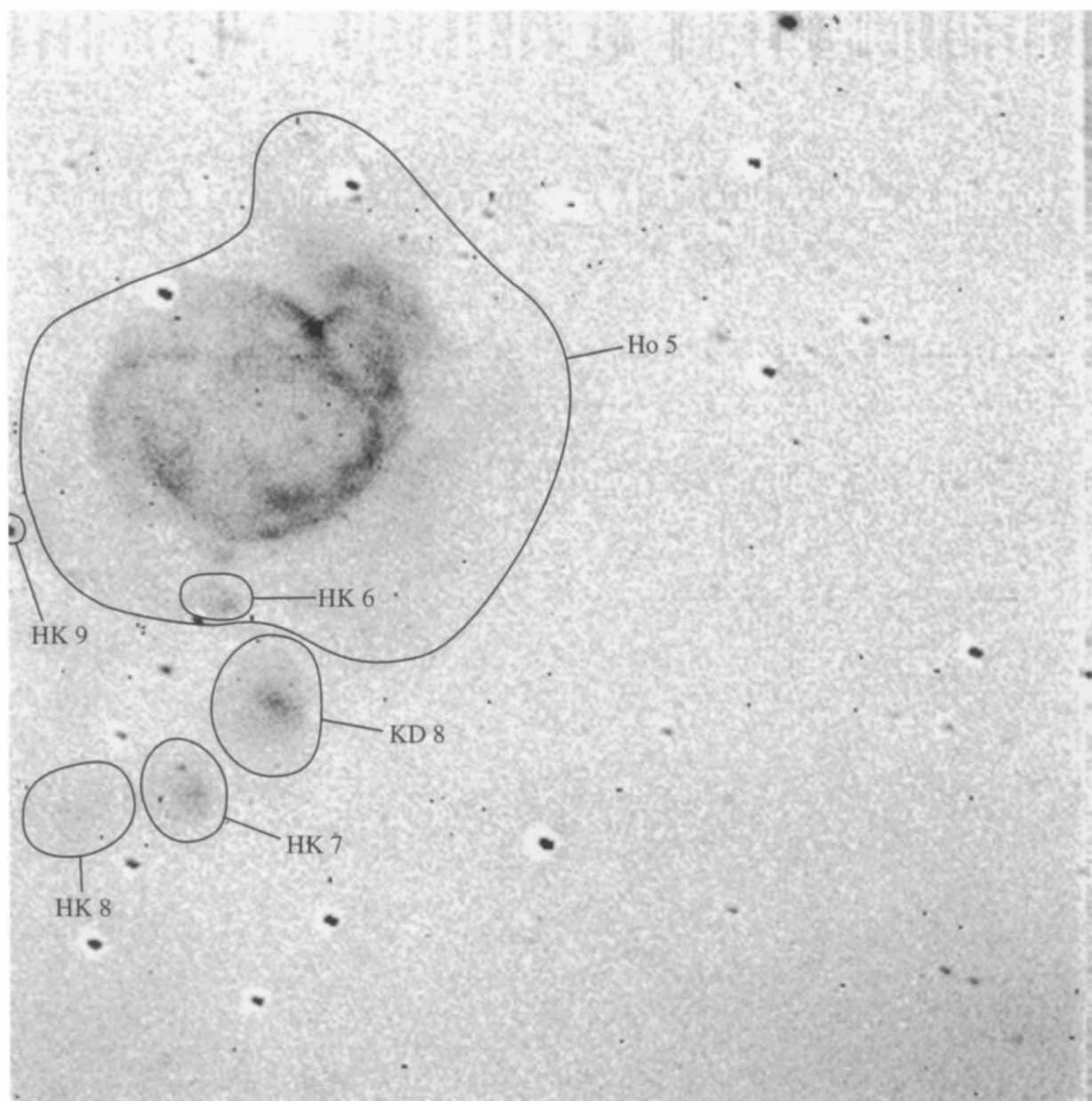
NGC 6822

Chart 168



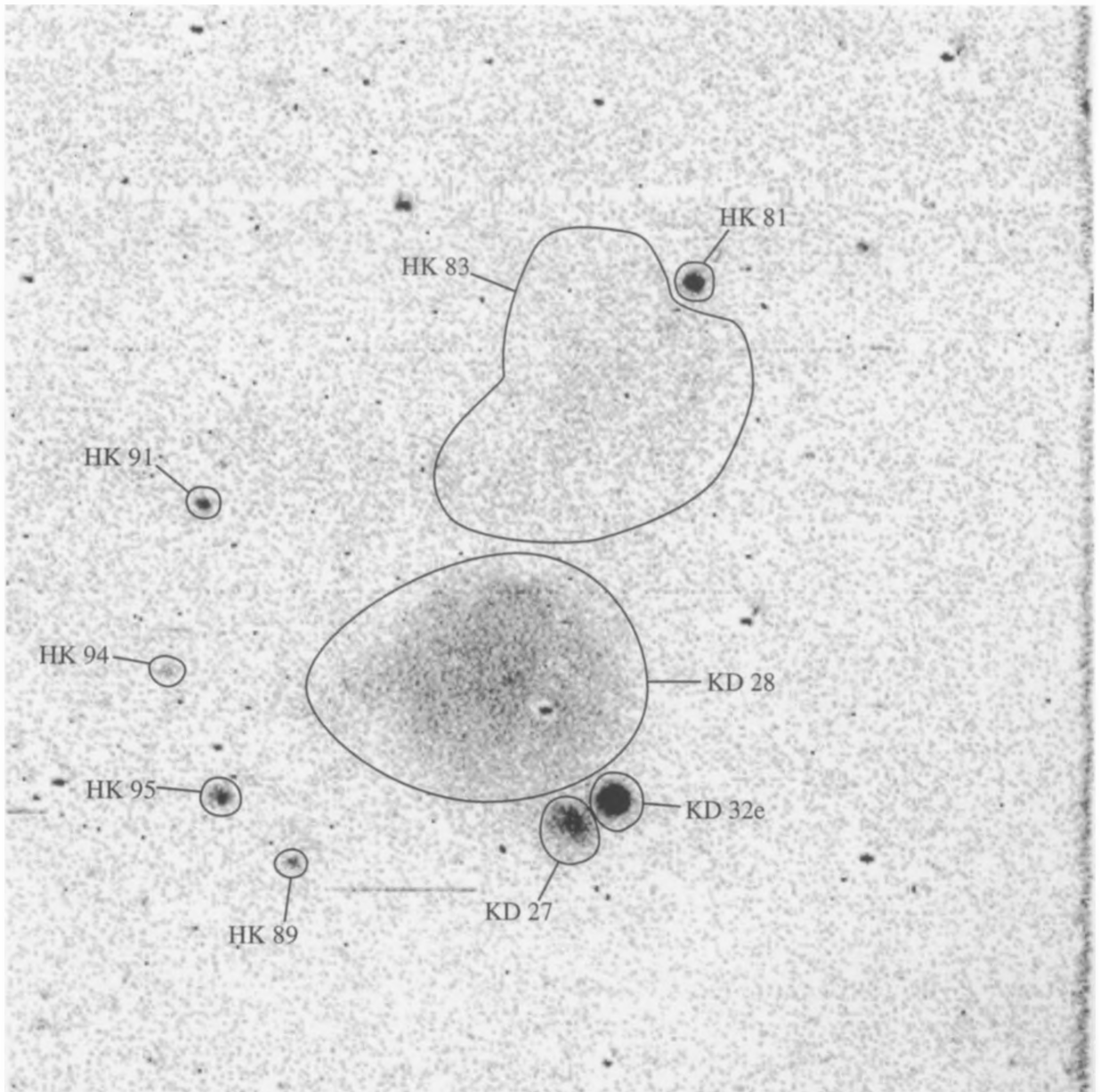
NGC 6822

Chart 169



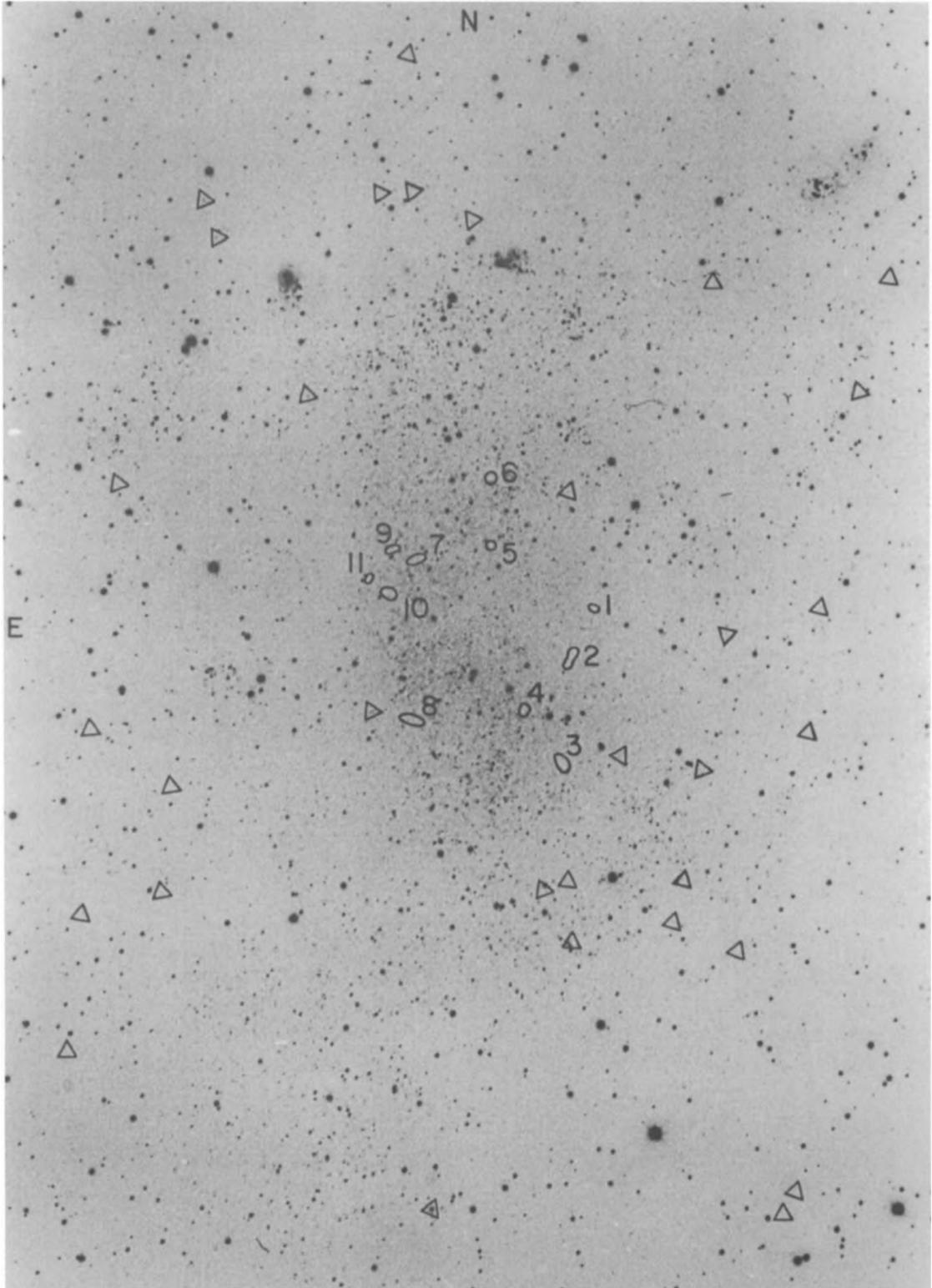
NGC 6822

Chart 170



NGC 6822

Chart 171



NGC 6822

References

1. Aaronson, M., Cook, K.H., & Norris, J. 1985, "The AGB Population of Nearby Galaxies", in *Spectral Evolution of Galaxies*, edited by C. Chiosi and A. Renzini (Reidel, Dordrecht), p. 171.
2. Aaronson, M., Da Costa, G.S., Hartigan, P., Mould, J.R., Norris, J., & Stockman, H.S. 1984, "Discovery of the First Carbon Star in NGC 6822", *ApJ*, 277, L9.
3. Aaronson, M., Mould, J., & Cook, K.H. 1985, "Discovery of the First S Star in NGC 6822", *ApJ*, 291, L41.
4. Alloin, D., Collin-Souffrin, S., Joly, M., & Vigroux, L. 1979, "Nitrogen and Oxygen Abundances in Galaxies", *A&A*, 78, 200.
5. Armandroff, T.E., & Massey, P. 1985, "Wolf-Rayet Stars in NGC 6822 and IC 1613", *ApJ*, 291, 685.
6. Armandroff, T.E., & Massey, P. 1991, "Wolf-Rayet Stars in Local Group Galaxies: Numbers and Spectral Properties", *AJ*, 102, 927.
7. Arsenault, R. & Roy, J.R. 1986, "Integrated H α Profiles of Giant Extragalactic H II Regions", *AJ*, 92, 567.
8. Bogess, N.W. 1967, "The Structure of NGC 6822", Ph.D. thesis, University of Michigan.
9. Bogess, N.W. 1968, "Structure of NGC 6822", *AJ*, 73, S6.
10. Bothun, G.D., & Rogers, C. 1992, "Surface Photometry of Disk Galaxies at 60 and 100 μ m: Radial Gradients in Dust Temperature in Optically Thin Disks", *AJ*, 103, 1484.
11. Breysacher, J., & Lequeux, J. 1983, "Search for Wolf-Rayet, Carbon and M Stars in External Galaxies with the GRISM/GRENS Technique", *The Messenger*, 33, 21.
12. Burley, J. 1963, "Neutral Hydrogen in NGC 6822", *AJ*, 68, 274.
13. Castañada, H.O., Vilchez, J.M., & Copetti, M.V.F. 1992, "Density Studies on Giant Extragalactic H II Regions", *A&A*, 260, 370.
14. Clayton, C.A. 1987, "The Dynamics of the Giant Ring Nebula Hubble III in NGC 6822", *MNRAS*, 226, 493.
15. Collier, J., & Hodge, P. 1994, "The H II Regions of NGC 6822. III. A Photometric Atlas", *ApJS*, 92, 119.
16. Collier, J., Hodge, P., & Kennicutt, R.C. 1995, "The H II Regions of NGC 6822. IV. A Multivariate and Bivariate Analysis", *PASP*, 107, 361.
17. Cook, K.H., Aaronson, M., & Norris, J. 1986, "Carbon and M Stars in Nearby Galaxies: A Preliminary Survey Using a Photometric Technique", *ApJ*, 305, 634.
18. D'Odorico, S., & Dopita, M. 1983, "Chemical Abundances in the Interstellar Medium of Galaxies from Spectrophotometry of Supernova Remnants", in *Supernova Remnants and their X-Ray Emission*, IAU Symposium No. 101, edited by J. Danziger and P. Gorenstein (Reidel, Dordrecht), p. 517.
19. D'Odorico, S., Dopita, M.A., & Benvenuti, P. 1980, "A Catalog of Supernova Remnant Candidates in Nearby Galaxies", *A&AS*, 40, 67.
20. de Vaucouleurs, G. 1978, "The Extragalactic Distance Scale. II. Distances of the Nearest Galaxies from Primary Indicators", *ApJ*, 223, 730.

21. Dickel, J.R., D'Odorico, S., & Silverman, A. 1985, "VLA Observations of Three Extragalactic SNR at 20 and 6 cm", *AJ*, 90, 414.
22. Dufour, R.J., & Talent, D.L. 1980, "Spectrophotometry of a Planetary Nebula in the Irregular Galaxy NGC 6822", *ApJ*, 235, 22.
23. Elias, J.H., & Frogel, J.A. 1985, "M Supergiants in Local Group Irregular Galaxies: Metallicities and Distances", *ApJ*, 289, 141.
24. Elmegreen, B.G., Elmegreen, D.M., & Morris, M. 1980, "On the Abundance of Carbon Monoxide in Galaxies: A Comparison of Spiral and Magellanic Irregular Galaxies", *ApJ*, 240, 455.
25. Fabbiano, G., Kim, D.-W., & Trinchieri, G. 1992, "An X-Ray Catalog and Atlas of Galaxies", *ApJS*, 80, 531.
26. Freedman, W.L. 1986, "Recent CCD Observations of Cepheids in Nearby Galaxies: A Progress Report", in *Galaxy Distances and Deviations from Universal Expansion*, edited by B.F. Madore and R. B. Tully (Reidel, Dordrecht), p. 21.
27. Gallagher, III, J.S., Hunter, D.A., Gillett, F.C., & Rice, W.L. 1991, "Far-Infrared Properties of NGC 6822", *ApJ*, 371, 142.
28. Gallart, C., Aparicio, A., Bertelli, G., & Chiosi, C. 1996, "The Local Group Dwarf Irregular Galaxy NGC 6822. II. The Old and Intermediate-Age Star Formation History", *AJ*, 112, 1905.
29. Gallart, C., Aparicio, A., Bertelli, G., & Chiosi, C. 1996, "The Local Group Dwarf Irregular Galaxy NGC 6822. III. The Recent Star Formation History", *AJ*, 112, 2596.
30. Gallart, C., Aparicio, A., Chiosi, C., Bertelli, G., & Vilchez, J.M. 1994, "Asymptotic Giant Branch Stars in NGC 6822: Probes of Star Formation History", *ApJ*, 425, L9.
31. Gallart, C., Aparicio, A., & Vilchez, J.M. 1996, "The Local Group Dwarf Irregular Galaxy NGC 6822. I. The Stellar Content", *AJ*, 112, 1928.
32. Gottesman, S.T., & Weliachew, L. 1977, "An Interferometer Study of the Neutral Hydrogen Associated with the Optical Core of the Irregular Galaxy NGC 6822", *A&A*, 61, 523.
33. Hippelein, H.H. 1986, "Turbulent Gas Motions in Giant H II Regions. II. The Luminosity-Velocity Dispersion Relation", *A&A*, 160, 374.
34. Hodge, P.W. 1969, "Distribution of H II Regions in Irregular Galaxies", *ApJ*, 156, 847.
35. Hodge, P.W. 1969, "H II Regions in Twenty Nearby Galaxies", *ApJS*, 18, 73.
36. Hodge, P.W. 1977, "The Structure and Content of NGC 6822", *ApJS*, 33, 69.
37. Hodge, P.W. 1980, "The Recent Evolutionary History of the Galaxies NGC 6822 and IC 1613", *ApJ*, 241, 125.
38. Hodge, P.W. 1986, "The Ages of Local Group Galaxies", *MSAIt*, 57, 553.
39. Hodge, P., Kennicutt, Jr., R.C., & Lee, M.G. 1988, "The H II Regions of NGC 6822. I. An Atlas of 157 H II Regions", *PASP*, 100, 917.
40. Hodge, P., Lee, M.G., & Kennicutt, Jr., R.C. 1989, "The H II Regions of NGC 6822. II. The Luminosity Function and Size Distribution", *PASP*, 101, 32.
41. Hodge, P., Smith, T., Eskridge, P., MacGillivray, H., & Beard, S. 1991, "A COSMOS Study of the Structure and Content of NGC 6822", *ApJ*, 379, 621.
42. Hoessel, J., & Anderson, N. 1986, "Photometry of Resolved Galaxies. V. NGC 6822", *ApJS*, 60, 507.
43. Hubble, E. 1925, "NGC 6822, A Remote Stellar System", *ApJ*, 62, 409.
44. Humphreys, R.M. 1980, "Studies of Luminous Stars in Nearby Galaxies. V. The Local Group Irregulars NGC 6822 and IC 1613", *ApJ*, 238, 65.

45. Hunter, D.A., & Gallagher, III, J.S. 1985, "Star-Forming Properties and Histories of Dwarf Irregular Galaxies: Down but not Out", *ApJS*, 58, 533.
46. Hunter, D.A., Hawley, W.N., and Gallagher, III, J.S. 1993, "A Survey for Extra- H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
47. Israel, F.P. 1997, "Dust and Molecules in the Local Group Galaxy NGC 6822. II. CO and Molecular Hydrogen", *A&A*, 317, 65.
48. Israel, F.P., Bontokoe, T.R., & Kester, D.J.M. 1996, "Dust and Molecules in the Local Group Galaxy NGC 6822. I. Dust, Star Formation, and the Origin of Infrared Emission", *A&A*, 317, 65.
49. Israel, F.P., Tacconi, L.G., & Baas, F. 1995, "CO Observations of 25 Dwarf Galaxies", *A&A*, 295, 599.
50. Jones, J.H., Christian, C.A., Crowe, R., McLaren, R., Crabtree, D., & Richer, H. 1987, "Near Infrared Photometry of Cepheid Variables in NGC 6822", *BAAS*, 19, 1052.
51. Kayser, S.E. 1967, "Photometry of the Nearby Irregular Galaxy, NGC 6822", *AJ*, 72, 134.
52. Kennicutt, Jr., R.C. 1984, "Structural Properties of Giant H II Regions in Nearby Galaxies", *ApJ*, 287, 116.
53. Killen, R.M., & Dufour, R.J. 1982, "Diffuse Nebulae and Emission-Line Stars in NGC 6822", *PASP*, 94, 444.
54. Kinman, T.D., Green, J.R., & Mahaffey, C.T.C. 1979, "New Compact H II Regions in NGC 6822", *PASP*, 91, 749.
55. Klein, U. & Gräve, R. 1986, "Multi-Frequency Radio Continuum Observations of Dwarf Irregular Galaxies", *A&A*, 161, 155.
56. Klein, U., Gräve, R., & Wielebinski, R. 1983, "A Survey of the Distribution of $\lambda 2.8$ cm Radio Continuum in Nearby Galaxies. III. A Small Sample of Irregular and Blue Compact Galaxies", *A&A*, 117, 332.
57. Lee, M.G., Freedman, W.L., & Madore, B.F. 1992, "I-band Cepheid Distance to NGC 6822", presented at New Perspectives on Stellar Pulsation and Pulsating Variable Stars, IAU Colloquium 139.
58. Lequeux, J. 1979, "Comparison of the Rates of Formation of Massive Stars and of the Initial Mass Functions in Galaxies of the Local Group", *A&A*, 71, 1.
59. Lequeux, J., Peimbert, M., Rayo, J.F., Serrano, A., & Torres-Peimbert, S. 1979, "Chemical Composition and Evolution of Irregular and Blue Compact Galaxies", *A&A*, 80, 155.
60. Madore, B.F., & Freedman, W.L. 1991, "The Cepheid Distance Scale", *PASP*, 103, 933.
61. Marconi, G., Tosi, M., Greggio, L., & Focardi, P. 1995, "Star Formation in Dwarf Irregular Galaxies: NGC 6822", *AJ*, 109, 173.
62. Markert, T.H., & Donahue, M.E. 1985, "Observations of Four Nearby Galaxies with the *Einstein Observatory*", *ApJ*, 297, 564.
63. Massey, P., Armandroff, T.E., Pyke, R., Patel, K., & Wilson, C.D. 1995, "Hot Luminous Stars in Selected Regions of NGC 6822, M31, and M33", *AJ*, 110, 2715.
64. Massey, P., Conti, P.S., & Armandroff, T.E. 1987, "The Spectra of Extragalactic Wolf-Rayet Stars", *AJ*, 94, 1538.
65. McAlary, C.W., Madore, B.F., McGonegal, R., McLaren, R.A., & Welch, D.L. 1983, "The Distance to NGC 6822 from Infrared Photometry of Cepheids", *ApJ*, 273, 539.
66. Moffat, A.F.J., & Shara, M.M. 1983, "Wolf-Rayet Stars in the Local Group Galaxies M31 and NGC 6822", *ApJ*, 273, 544.
67. Mould, J., & Aaronson, M. 1986, "The Formation and Evolution of Carbon Stars", *ApJ*, 303, 10.

68. O'Dell, C.R., & Castañada, H.O. 1984, "[O II] Studies of Galactic Planetary Nebulae and Extragalactic H II Complexes", *ApJ*, 283, 158.
69. Ohta, K., Tomita, A., Saitō, M. 1993, "CO-to H₂ Conversion Factor in Dwarf Irregular Galaxies", *PASJ*, 45, L21.
70. Pagel, B.E.J., Edmunds, M.G., & Smith, G. 1980, "On the Composition of H II Regions in Southern Galaxies. II. NGC 6822 and NGC 1313", *MNRAS*, 193, 219.
71. Patel, K., & Wilson, C.D. 1995, "Are Galaxies Optically Thin to their own Lyman-continuum Radiation? II. NGC 6822", *ApJ*, 453, 162.
72. Peimbert, M., & Spinrad, H. 1970, "On the Chemical Abundance of NGC 6822", *A&A*, 7, 311.
73. Perrine, C.D. 1922, "Notes on Four Interesting Nebulae", *MNRAS*, 82, 486.
74. Price, J.S., Mason, S.F., & Gullixson, C.A. 1988, "CCD Surface Photometry of NGC 147, IC 1613, and NGC 6822", *BAAS*, 20, 701.
75. Rice, W. 1993, "An Atlas of High-Resolution *IRAS* Maps of Nearby Galaxies", *AJ*, 105, 67.
76. Richer, M.G., & McCall, M.L. 1995, "Oxygen Abundances in Diffuse Ellipticals and the Metallicity-Luminosity Relations for Dwarf Galaxies", *ApJ*, 445, 642.
77. Richer, H.B., & Westerlund, B.E. 1983, "Carbon Stars in Local Group Galaxies", *ApJ*, 264, 114.
78. Sandage, A., & Tamman, G.A. 1974, "Steps Toward the Hubble Constant. I. Calibration of the Linear Sizes of Extragalactic H II Regions", *ApJ*, 190, 525.
79. Schmidt, E.G., & Spear, G.G. 1989, "Pulsation Properties of Extragalactic Cepheids. I. Differential Light Curves for Field No. 1 in NGC 6822", *MNRAS*, 236, 567.
80. Skillman, E.D., Terlevich, R., & Melnick, J. 1989, "Abundances in Southern Local Group Dwarf Irregular Galaxies", *MNRAS*, 240, 563.
81. Smith, H.E. 1975, "Spectrophotometric Observations of Ionized Hydrogen Regions in Nearby Spiral and Irregular Galaxies", *ApJ*, 199, 591.
82. Tarrab, I. 1983, "Estimated Energy and Momentum Input to the Interstellar Medium for Several External Galaxies", *A&A*, 125, 308.
83. Tomita, A., Ohta, K., & Saitō, M. 1993, "H-Alpha Velocity Fields of Giant H II Regions in Four Nearby Dwarf Irregular Galaxies", *PASJ*, 45, 693.
84. van den Bergh, S., & Humphreys, R.M. 1979, "*UBV* Photometry in the Dwarf Irregular Galaxy NGC 6822", *AJ*, 84, 604.
85. Vangioni-Flam, E., Lequeux, J., Maucherat-Joubert, M., & Rocca-Volmerange, B. 1980, "Ultraviolet Studies of the Magellanic Clouds. II. Internal Extinction, Formation of Massive Stars, Comparison with Other Galaxies", *A&A*, 90, 73.
86. Visvanathan, N. 1989, "The Zero Point of the Cepheid Period-Luminosity Relation in the 1.05 Micron Wave Band", *ApJ*, 346, 629.
87. Volders, L., & Högbom, J.A. 1961, "Observations of Neutral Hydrogen in IC 1613, NGC 6822 and M82", *Bull. Ast. Inst. Neth.*, 15, 307.
88. Walker, A.R. 1987, "Notes on Cepheid Variables in Galaxies More Distant Than the Magellanic Clouds", *S. African Astron. Obs. Circ.*, 11, 125.
89. Westerlund, B.E., Azzopardi, M., Breysacher, J., & Lequeux, J. 1983, "Discovery of a Wolf-Rayet Star in NGC 6822", *A&A*, 123, 159.
90. Wilson, C.D. 1992, "The Stellar Populations of NGC 6822", *AJ*, 104, 1374.
91. Wilson, C.D. 1992, "A Comparison of the Properties of an Unbiased Sample of OB Associations in the Local Group Galaxies M33 and NGC 6822", *ApJ*, 384, L29.
92. Wilson, C.D. 1992, "CO Emission from the Dwarf Irregular Galaxy NGC 6822", *ApJ*, 391, 144.

93. Wilson, C.D. 1994, "First Observations of Individual Molecular Clouds in the Irregular Galaxy NGC 6822", *ApJ*, 434, L11

Pegasus

Alternate name(s): DDO 216

Right Ascension (2000): 23h 28m 34s

Decimation (2000): +14d 44.8m

Type: dIrr

Apparent magnitude (V): 12.04

Color (B-V): 0.61

(U-B): 0.06

(V-R):

Color Excess, E(B-V): 0.02

Absolute magnitude (M_V): -12.9

Distance (kpc): 955

Radial velocity (solar, km/sec): -182

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: 1; designation: Cl

Source: [this atlas]

OB associations: 2; designation: A

Source: [this atlas]

Variable stars: 12; designation: V

Source: [6]

Carbon stars: none

Source:

HII regions: 1; designation: AG1

Source: [2]

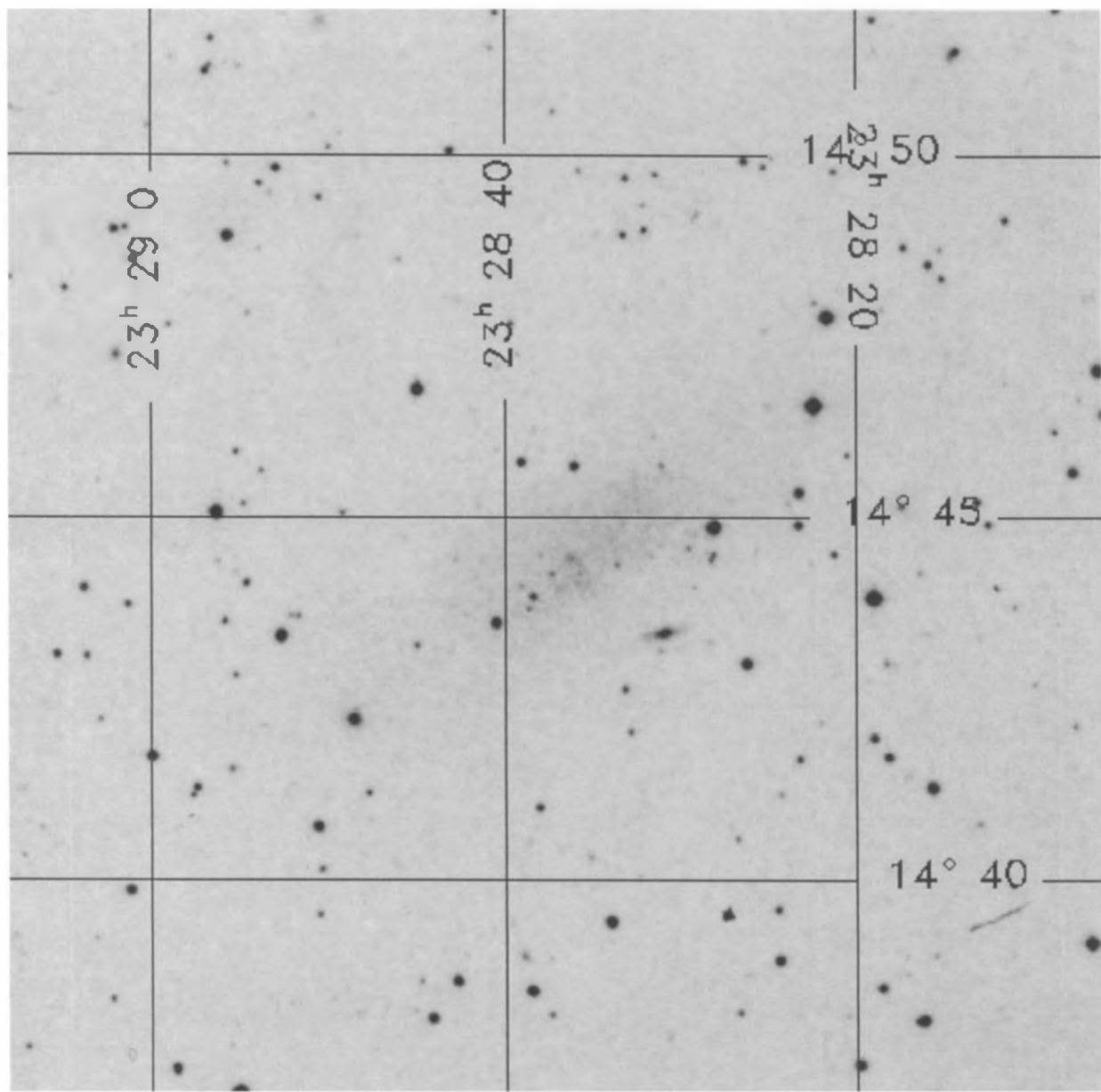
Planetary nebulae: 1; designation: PN

Source: [11]

Dust clouds: none

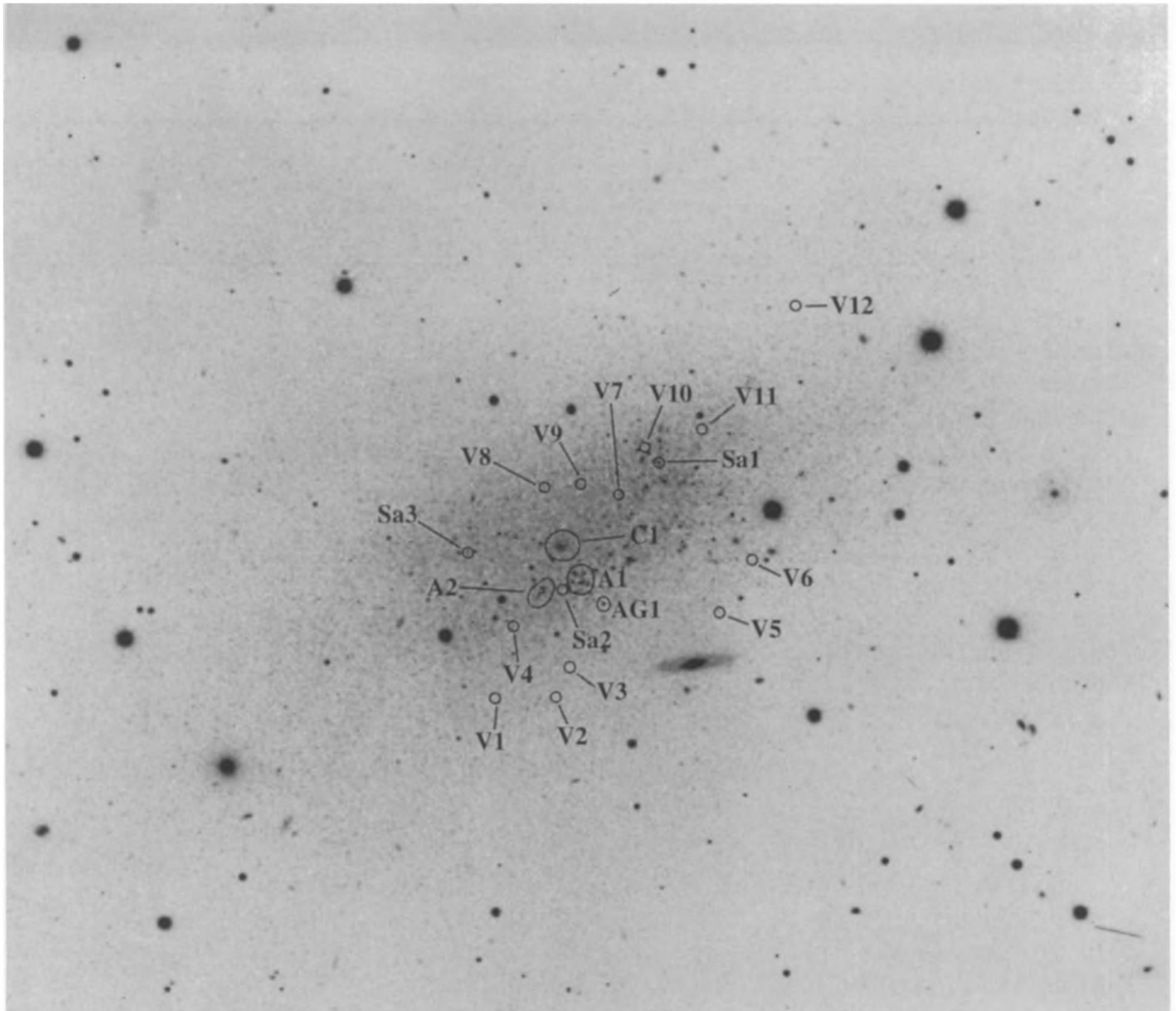
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Pegasus
Chart 172



Pegasus

Chart 173



Pegasus

References

1. Aparicio, A. 1994, "The Distance to the Pegasus Dwarf Irregular Galaxy: An Open Question", *ApJ*, 437, L27.
2. Aparicio, A., & Gallart, C. 1995, "The Stellar Content of the Pegasus Dwarf Irregular Galaxy", *AJ*, 110, 2105.
3. Aparicio, A., Gallart, C., & Bertelli, G. 1997, "The Star Formation History of the Pegasus Dwarf Irregular Galaxy", *AJ*, 114, 669.
4. Christian, C.A., & Tully, R.B. 1983, "The Local Group Irregular Galaxies, LGS 3 and Pegasus", *AJ*, 88, 934.
5. Fisher, J.R., & Tully, R.B. 1979, "Photographs of Dwarf Irregular Galaxies in the Vicinity of the Local Group and the M81 Group", *AJ*, 84, 62.
6. Hoessel, J.G., Abbot, M.J., Saha, A., Mossman, A.E., & Danielson, G.E. 1990, "Variable Stars in the Pegasus Dwarf Galaxy (DDO 216)", *AJ*, 100, 1151.
7. Hoessel, J.G., & Mould, J.R. 1982, "Photometry of Resolved Galaxies. I. The Pegasus Dwarf Irregular", *ApJ*, 254, 38.
8. Hoffman, G.L., Salpeter, E.E., Farhat, B., Roos, T., Williams H., & Helou, G. 1996, "Arecibo H I Mapping of a Large Sample of Dwarf Irregular Galaxies", *ApJS*, 105, 269.
9. Hunter, D.A., Hawley, W.N., & Gallagher, III, J.S. 1993, "A Survey for Extra-H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
10. Israel, F.P., & Burton, W.B. 1986, "Search for ^{12}CO Emission from Twelve Irregular Dwarf Galaxies", *A&A*, 168, 369.
11. Jacoby, G.H., & Lesser, M.P. 1981, "Distances to Nearby Galaxies Derived from Planetary Nebulae", *AJ*, 86, 185.
12. Lo, K.Y., Sargent, W.L.W., & Young, K. 1993, "The H I Structure of Nine Intrinsically Faint Dwarf Galaxies", *AJ*, 106, 507.
13. Rowan-Robinson, M., Phillips, T.G., & White, G. 1980, "A Survey of Nearby Galaxies for CO", *A&A*, 82, 381.
14. Sandage, A. 1986, "The Brightest Stars in Nearby Galaxies. VII. The Pegasus and Leo A Im V Dwarfs", *AJ*, 91, 796.
15. Sargent, W.L.W., & Lo, K.-Y. 1986, "The H I Structures of Extreme Dwarf Galaxies", in *Star Forming Dwarf Galaxies and Related Objects*, edited by D. Kunth, T. Thuan, and J.T.T. Van (Editions Frontieres, Gif-sur-Yvette), p. 253.
16. Skillman, E.D., Bomans, D.J., & Kobulnicky, H.A. 1997, "Interstellar Medium Abundances in the Pegasus Dwarf Irregular Galaxy", *ApJ*, 474, 205.

Phoenix

Alternate name(s):

Right Ascension (2000): 01h 51m 06s

Declination (2000): -44d 26.7m

Type: dE3/dIrr

Apparent magnitude (V): 13.2

Color (B-V): 0.61

(U-B): -0.21

(V-R):

Color Excess, E(B-V): 0.02

Absolute magnitude (M_V): -10.1

Distance (kpc): 445

Radial velocity (solar, km/sec): 56

Objects Identified On the Atlas:

Globular clusters: 3 (suspected); designation: GC

Source: [2]

Open clusters: none

Source:

OB associations: 1; designation: A1

Source: [this atlas]

Variable stars: none

Source:

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Source: [8]

HII regions: none

Source:

Planetary nebulae: none

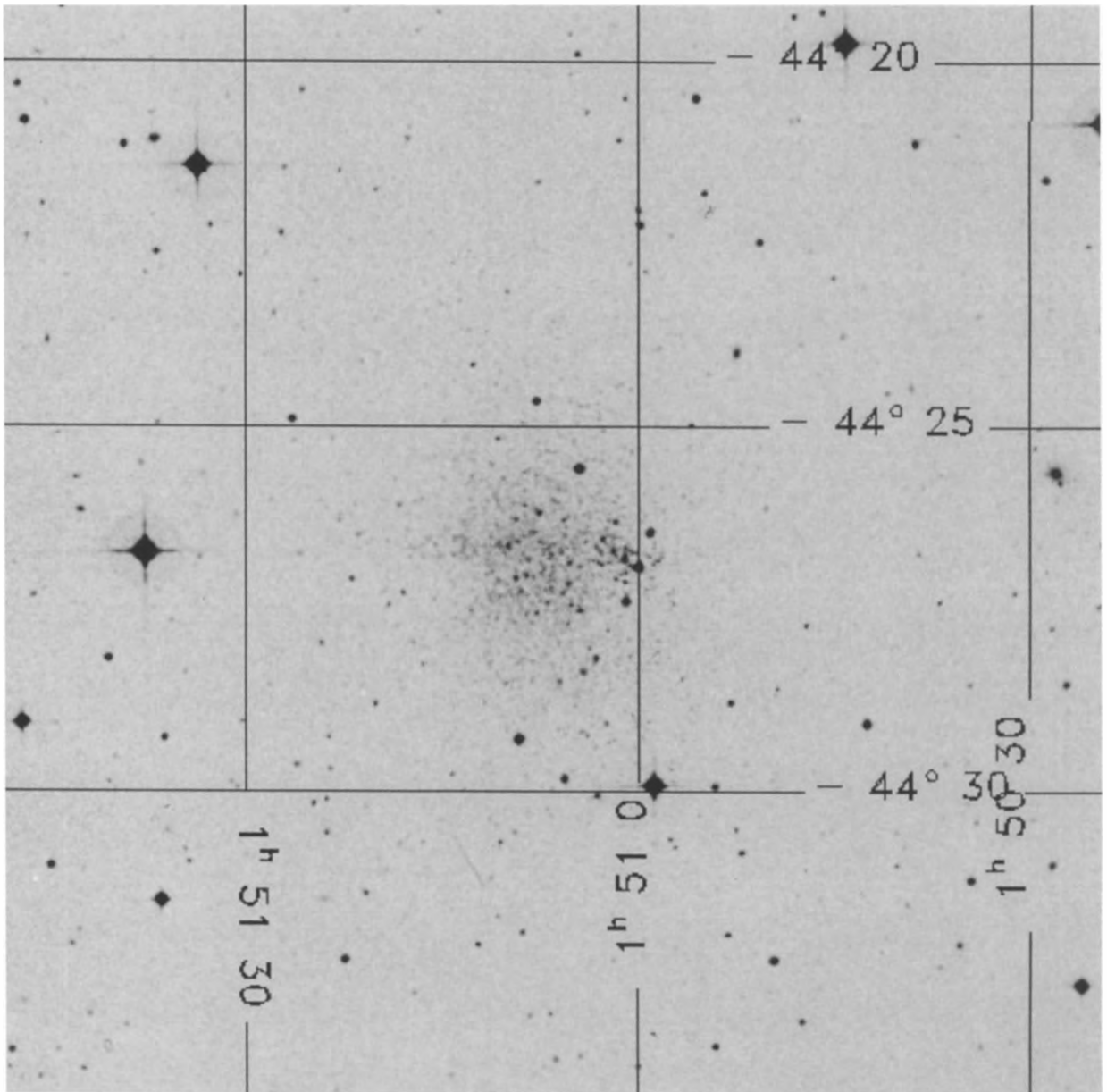
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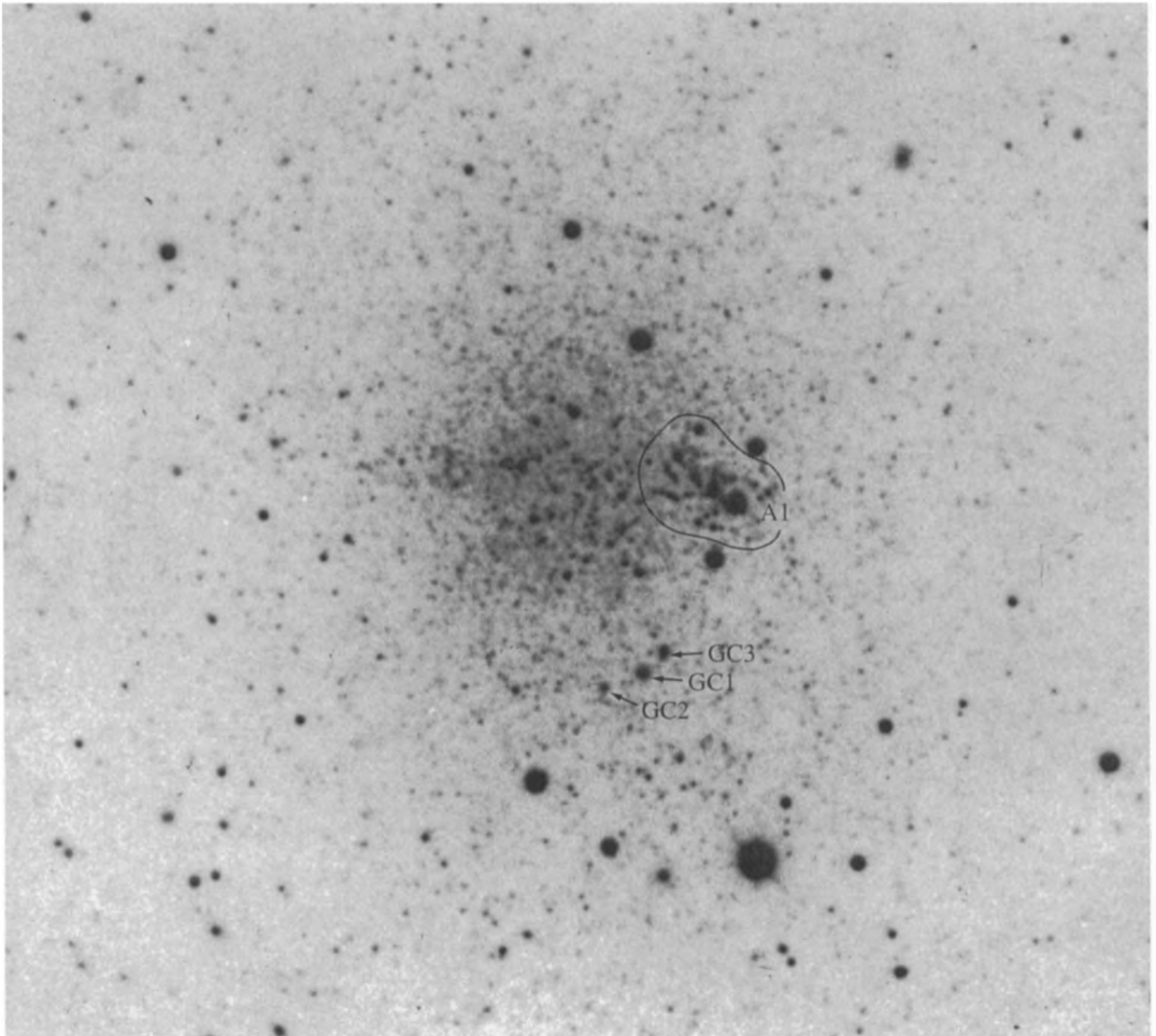
Phoenix

Chart 174



Phoenix

Chart 175



Phoenix

References

1. Caldwell, N., & Schommer, R. 1988, "Cepheid Variables in the Phoenix Galaxy and IC 5152", in the Extragalactic Distance Scale, ASP Conf. Series v.4, edited by S. van den Bergh and C.J. Pritchet (Astronomical Society of the Pacific, San Francisco), p. 77.
2. Canterna, R. & Flower, P.J. 1977, "A New Dwarf Irregular Galaxy in the Constellation Phoenix", *ApJ*, 212, L57.
3. Carignan, C., Demers, S., & Côté, S. 1991, "The H I Content of the Local Group Dwarf (Spheroidal or Irregular?) Galaxy Phoenix", *ApJ*, 381, L13.
4. Da Costa, G.S. 1994, "New Results for Local Group Dwarf Galaxies", in Dwarf Galaxies, edited by G. Meylan and P. Prugniel (European Southern Observatory, Munich), p. 221.
5. Gratton, R.G., Ortolani, S., & Richter, O. 1986, "The Dwarf Galaxies in Fornax and in Phoenix", *MSAIt*, 57, 561.
6. Madore, B.F., & Freedman, W.L. 1991, "The Cepheid Distance Scale", *PASP*, 103, 933.
7. Morras, R., & Bajaja, E. 1986, "H I Around the Dwarf Galaxy in Phoenix", *Rev. Mex. Astron. Astrof.*, 13, 69.
8. Ortolani, S., & Gratton, R.G. 1988, "Stellar Photometry in the Phoenix Dwarf Galaxy", *PASP*, 100, 1405.
9. Schuster, H.E., & West, R.M. 1976, "A Very Distant Globular Cluster?", *A&A*, 49, 129.
10. van de Rydt, F., Demers, S., & Kunkel, W.E. 1991, "Phoenix: An Intermediate Dwarf Galaxy in the Local Group", *AJ*, 102, 130.
11. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.
12. Young, L.M., & Lo, K.Y. 1997, "The Neutral Interstellar Medium in Nearby Dwarf Galaxies. III. Sagittarius DIG, LGS 3, and Phoenix", *ApJ*, 490, 710.

Sag DIG

Alternate name(s): UKS 1927-177

Right Ascension (2000): 19h 29m 59s

Declination (2000): -17d 40.7m

Type: dIrr

Apparent magnitude (V): 13.9

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V): 0.22

Absolute magnitude (M_V): -11.8

Distance (kpc): 1060

Radial velocity (solar, km/sec): -80

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: 2; designation: A

Source: [this atlas]

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: 3 (Nos. 1 and 2 may be foreground emission-line stars) designation: Arabic numerals

Source: [7]

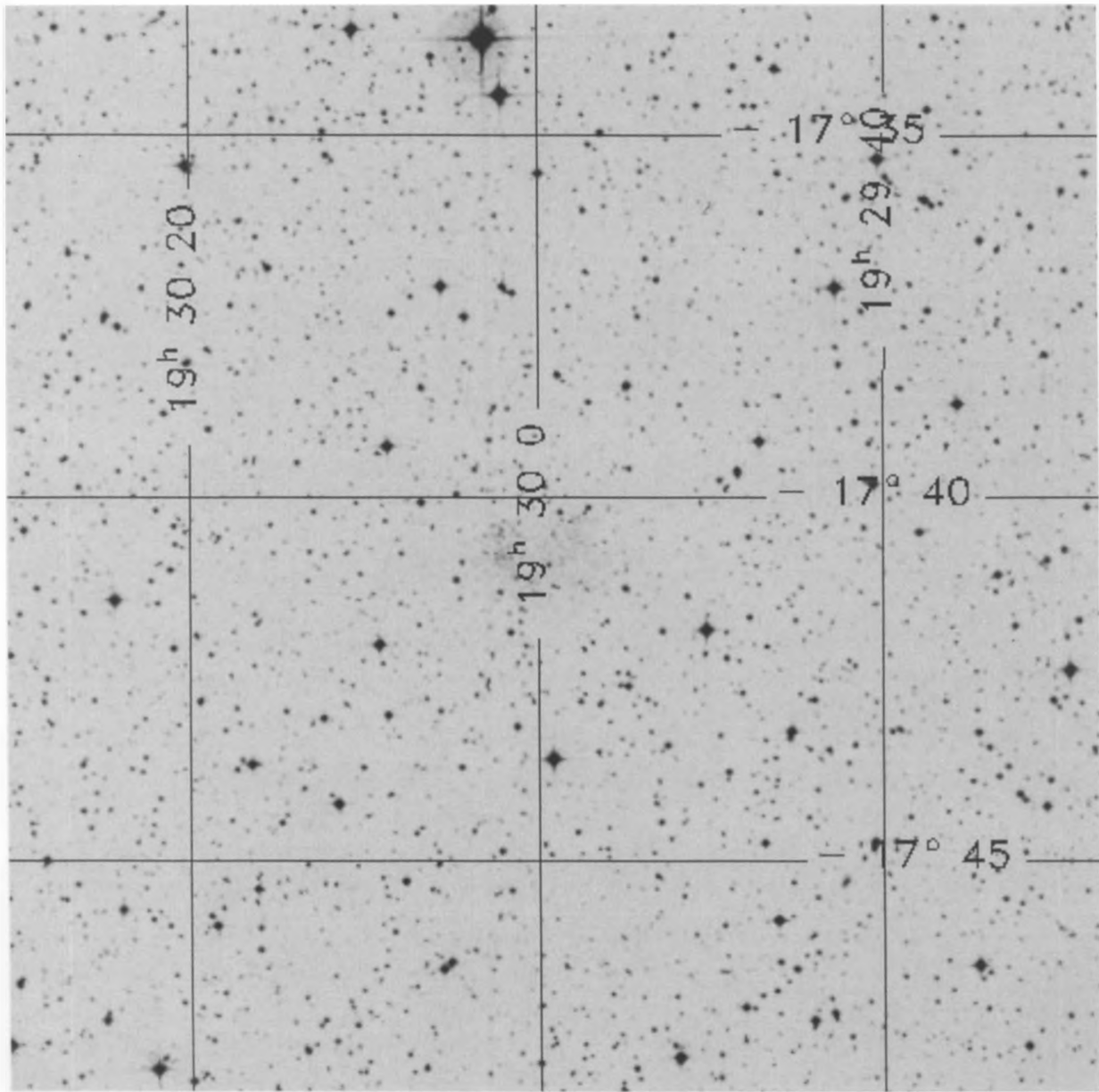
Planetary nebulae: none

Source:

Dust clouds: none

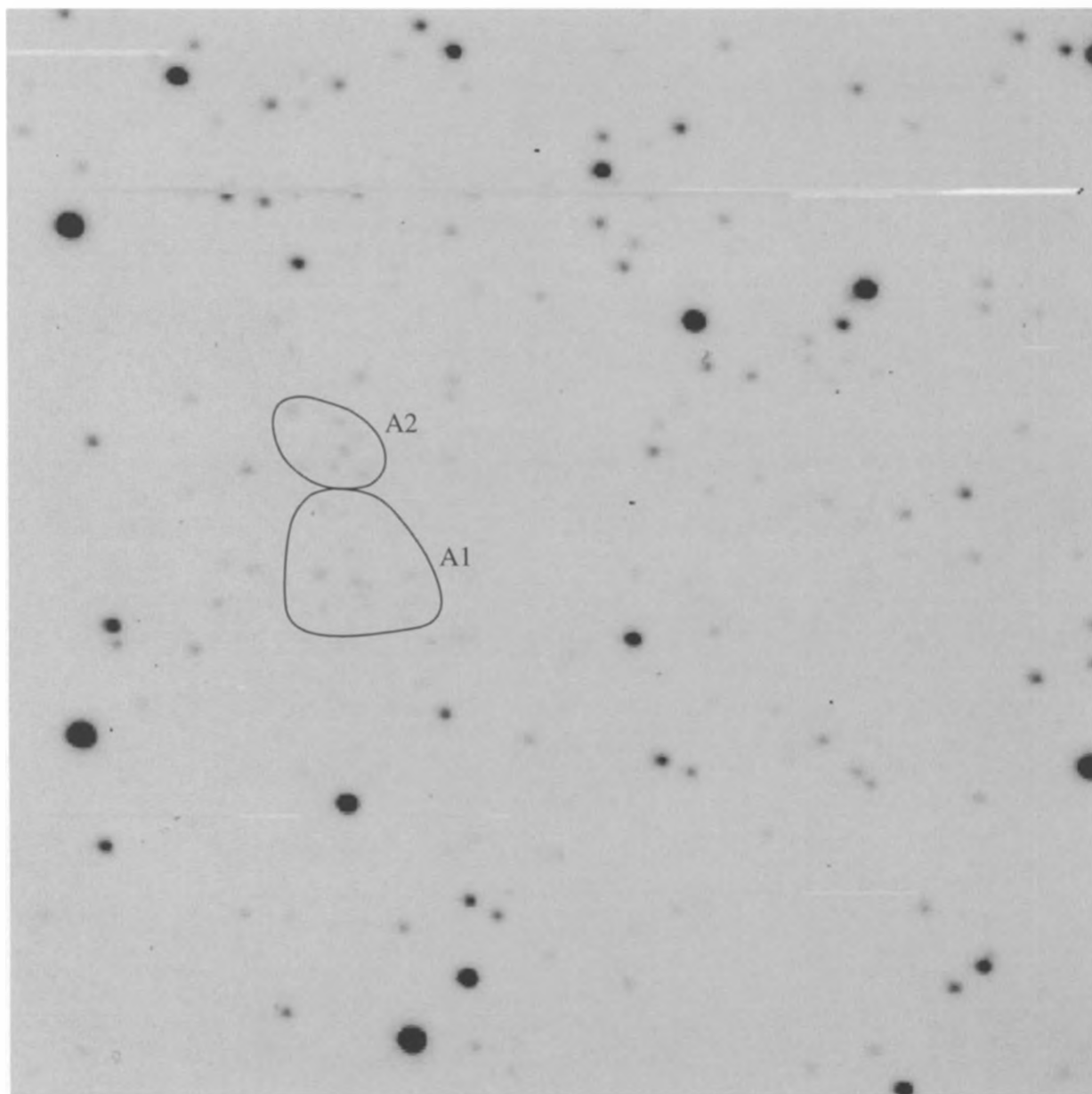
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Sag DIG
Chart 176



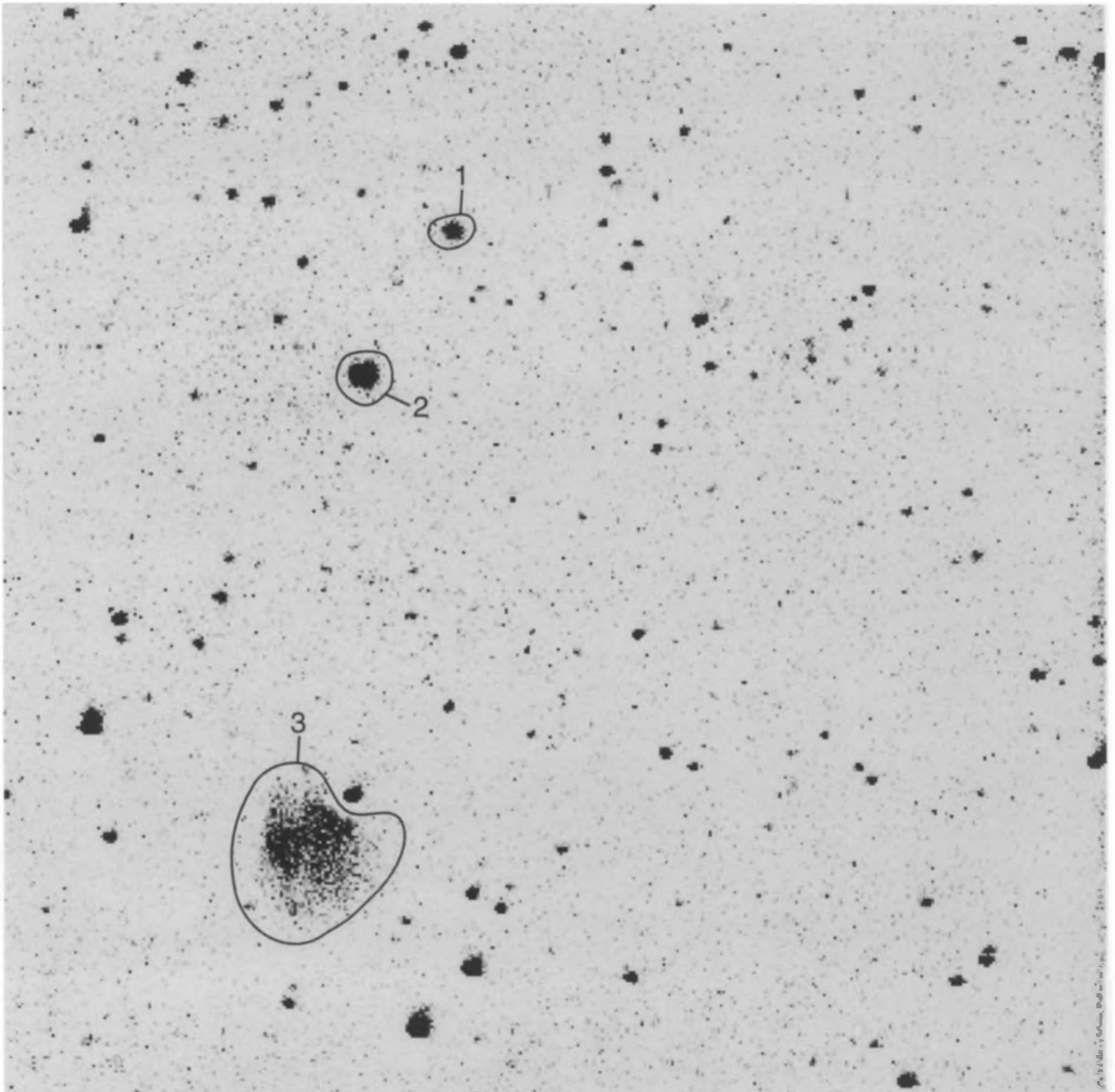
Sag DIG

Chart 177



Sag DIG

Chart 178



Sag DIG

References

1. Cesarsky, D.A., Laustsen, S., Lequeux, J., Schuster, H.-E., & West, R.M. 1977, "Two New Faint Stellar Systems Discovered on ESO Schmidt Plates", *A&A*, 61, L31.
2. Cook, K.H., "Asymptotic Giant Branch Populations in Composite Stellar Systems", *BAAS*, 20, 742.
3. Lo, K.Y., Sargent, W.L.W., & Young, K. 1993, "The H I Structure of Nine Intrinsically Faint Dwarf Galaxies", *AJ*, 106, 507.
4. Longmore, A.J., Hawarden, T.G., Webster, B.L., Goss, W.M., & Mebold, U. 1978, "Two New Dwarf Galaxies in the Local Group: UKS 1927 – 177 and UKS 2323 – 326", *MNRAS*, 184, 97P.
5. Sargent, W.L.W., & Lo, K.-Y. "The H I Structures of Extreme Dwarf Galaxies", in *Star-Forming Dwarf Galaxies and Related Objects*, edited by D. Kunth, T.X. Thuan, and J.T.T. Van (Editions Frontieres, Gif-sur-Yvette), p. 253.
6. Skillman, E.D., Terlevich, R., & Melnick, J. 1989, "Abundances in Southern Local Group Dwarf Irregular Galaxies", *MNRAS*, 240, 563.
7. Strobel, N.V., Hodge, P., & Kennicutt, R.C. 1991, "H II Regions in Seven Dwarf Irregular Galaxies", *ApJ*, 383, 148.
8. Young, L.M., & Lo, K.-Y. 1997, "The Neutral Interstellar Medium in Nearby Dwarf Galaxies. III. Sagittarius DIG, LGS 3, and Phoenix", *ApJ*, 490, 710.

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Sagittarius

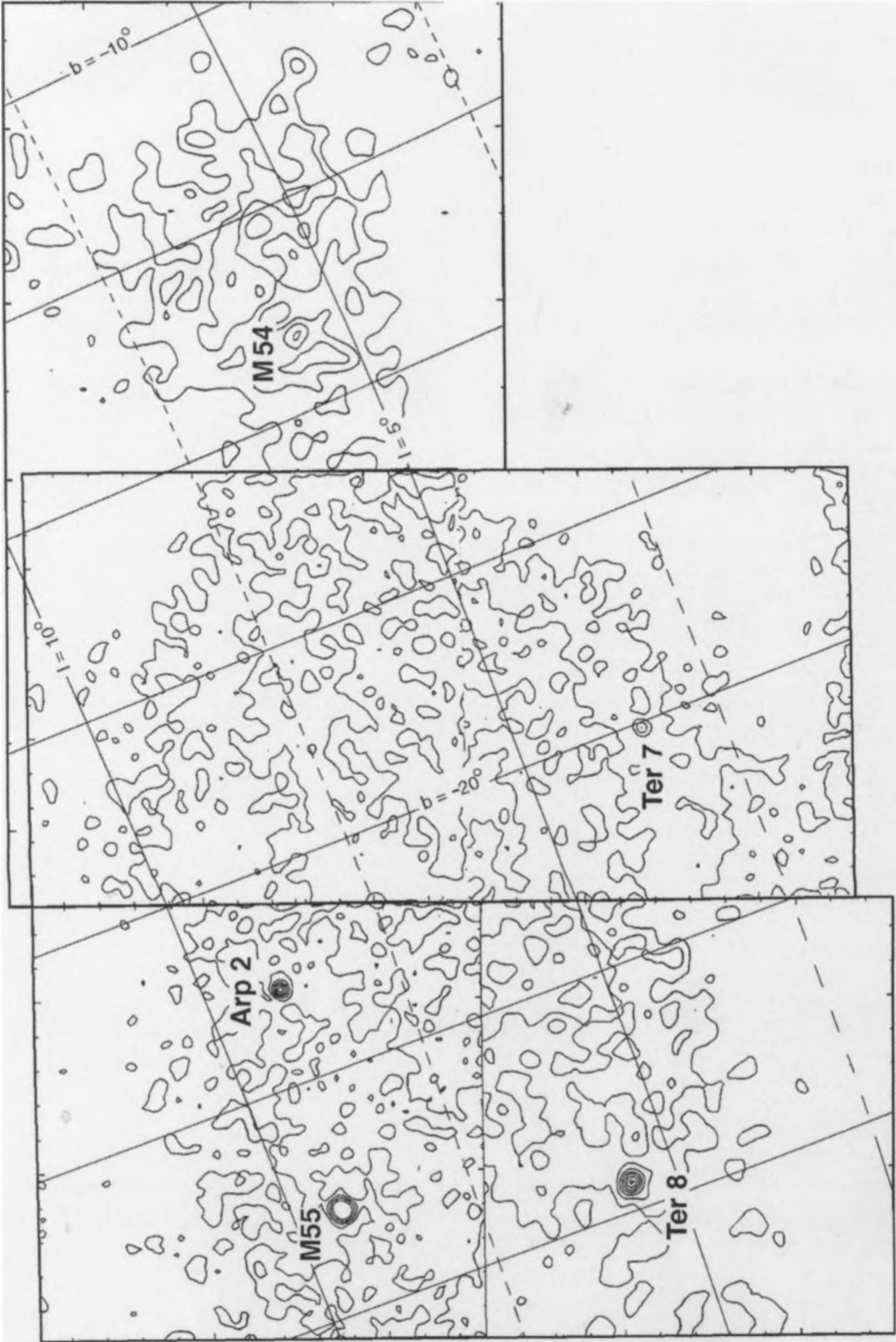
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 (V-R):
 Color Excess, E(B-V): 0.15
 Absolute magnitude (M_V): -13.4
 Distance (kpc): 24
 Radial velocity (solar, km/sec): 140

Objects Identified On the Atlas:

Globular clusters: 5; designation: traditional names
 Source: [9]
 Open clusters: none
 Source:
 OB associations: none
 Source:
 Variable stars: not shown
 Source: [2], [15], [19]
 Carbon stars: none
 Source:
 HII regions: none
 Source:
 Planetary nebulae: not shown
 Source: [24]
 Dust clouds: none
 Source:

Sagittarius

Chart 179



Sagittarius

References

1. Alard, C. 1996, "Evidence for the Sagittarius Dwarf Galaxy at Low Galactic Latitudes", *ApJ*, 458, L17.
2. Alcock, C., et al. 1997, "MACHO Project Photometry of RR Lyrae Stars in the Sagittarius Dwarf Galaxy", *ApJ*, 474, 217.
3. Catelan, M. 1997, "Color-Magnitude Diagrams of Merged Globular Clusters: Metallicity Effects", *ApJ*, 478, L99.
4. Da Costa, G.S., & Armandroff, T.W. 1995, "Abundances and Kinematics of the Globular Cluster Systems of the Galaxy and of the Sagittarius Dwarf", *AJ*, 109, 2533.
5. Edelson, D.J., & Elmegreen, B.G. 1997, "Computer Models of the Sagittarius Dwarf Interaction with the Milky Way", *MNRAS*, 290, 7.
6. Fahlman, G.G., Mandsuhev, G., Richer, H.B., Thompson, I.B., & Sivaramakrishnan, A. 1996, "The Main-Sequence Stars of the Sagittarius Dwarf Galaxy", *ApJ*, 459, L65.
7. Harding, P. 1994, "The Sagittarius Dwarf", *BAAS*, 26, 1395.
8. Ibata, R.A., Gilmore, G., & Irwin, M.J. 1994, "A Dwarf Satellite Galaxy in Sagittarius", *Nature*, 370, 194.
9. Ibata, R.A., Gilmore, G., & Irwin, M.J. 1995, "Sagittarius: The Nearest Dwarf Galaxy", *MNRAS*, 277, 781.
10. Ibata, R.A., Wyse, R.F.G., Gilmore, G., Irwin, M.J., & Suntzeff, N.B. 1997, "The Kinematics, Orbit, and Survival of the Sagittarius Dwarf Spheroidal Galaxy", *AJ*, 113, 634.
11. Koribalski, B., Johnston, S., & Otrupcek, R. 1994, "H I Observations of the New Sagittarius Dwarf", *MNRAS*, 270, L43.
12. Johnston, K.V., Spergel, D.N., & Hernquist, L. 1995, "The Disruption of the Sagittarius Dwarf Galaxy", *ApJ*, 451, 598.
13. Layden, A.C., & Sarajedini, A. 1997, "The Globular Cluster M54 and the Star Formation History of the Sagittarius Dwarf Galaxy", *ApJ*, 486, L107.
14. Marconi, G., Bounanno, R., Castellani, M., Iannicola, G., Molaro, P., Pasquini, L., & Pulone, L. 1998, "The Stellar Content of the Sagittarius Dwarf Galaxy", *A&A*, 330, 453.
15. Mateo, M., Kubiak, M., Szymański, M., Kaluźny, J., Krzemiński, W., & Udalski, A. 1995, "The Optical Gravitational Lensing Experiment: Variable Stars in the Sagittarius Dwarf Spheroidal Galaxy", *AJ*, 110, 1141.
16. Mateo, M., Mirabal, N., Udalski, A., Szymański, M., Kaluźny, J., Kubiak, M., Krzemiński, W., & Stanek, K.Z. 1996, "Discovery of a Tidal Extension of the Sagittarius Dwarf Spheroidal Galaxy", *ApJ*, 458, L13.
17. Mateo, M., Udalski, A., Szymański, M., Kaluźny, J., Kubiak, M., & Krzemiński, W. 1995, "The Optical Gravitational Lensing Experiment: Deep Photometry of the Sagittarius Dwarf Spheroidal Galaxy", *AJ*, 109, 588.
18. Ng, Y.K. 1997, "Are the Bulge C-stars Related to the Sagittarius Dwarf Galaxy?", *A&A*, 328, 211.
19. Ng, Y.K., & Schultheis, M. 1997, "Field # 3 of the Palomar-Groningen Survey. I. Variable Stars in the Outer Edge of the Sagittarius Dwarf Galaxy", *A&AS*, 123, 115.

20. Sarajedini, A., & Layden, A.C. 1995, "A Photometric Study of the Globular Cluster M54 and the Sagittarius Dwarf Galaxy: Evidence for Three Distinct Populations", *AJ*, 109, 1086.
21. Velazquez, H., & White, S.D.M. 1995, "On the Dynamics of the Sagittarius Dwarf Galaxy", *MNRAS*, 275, L23.
22. Walsh, J.R., Dudziak, G., Minniti, D., & Zijlstra, A.A. 1997, "Chemical Abundances of Planetary Nebulae in the Sagittarius Dwarf Elliptical Galaxy", *ApJ*, 487, 651.
23. Whitelock, P.A., Irwin, M., & Catchpole, R.M. 1996, "Bright Giants in the Sagittarius Dwarf Galaxy", *New Astronomy*, 1, 57.
24. Zijlstra, A.A., & Walsh, J.R. 1996, "Two Planetary Nebulae in the Sagittarius Dwarf Galaxy", *A&A*, 312, L21.

Sculptor

Alternate name(s):

Right Ascension (2000): 01h 00m 09s

Declination (2000): -33d 42.5m

Type: dE3

Apparent magnitude (V): 8.5

Color (B-V): 0.7

(U-B):

(V-R):

Color Excess, E(B-V): 0.02

Absolute magnitude (M_V): -11.0

Distance (kpc): 79

Radial velocity (solar, km/sec): 108

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: 3 anomalous Cepheids; designation: V; >600 RR Lyraes (not shown)

Source: [32], [34]

Carbon stars: 8; designation: C

Source: [4], [5], [28]

HII regions: none

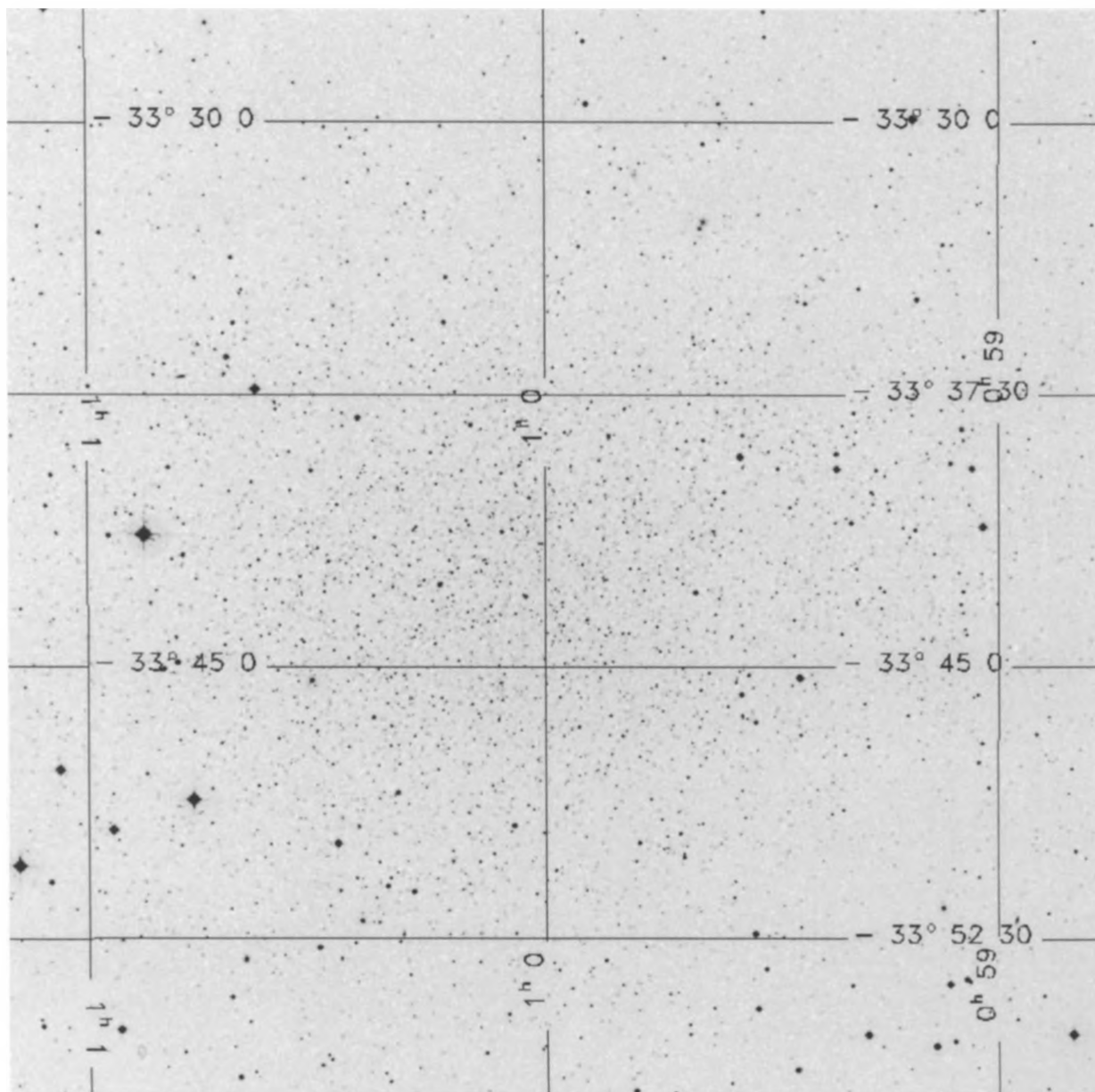
Source:

Planetary nebulae: none

Source:

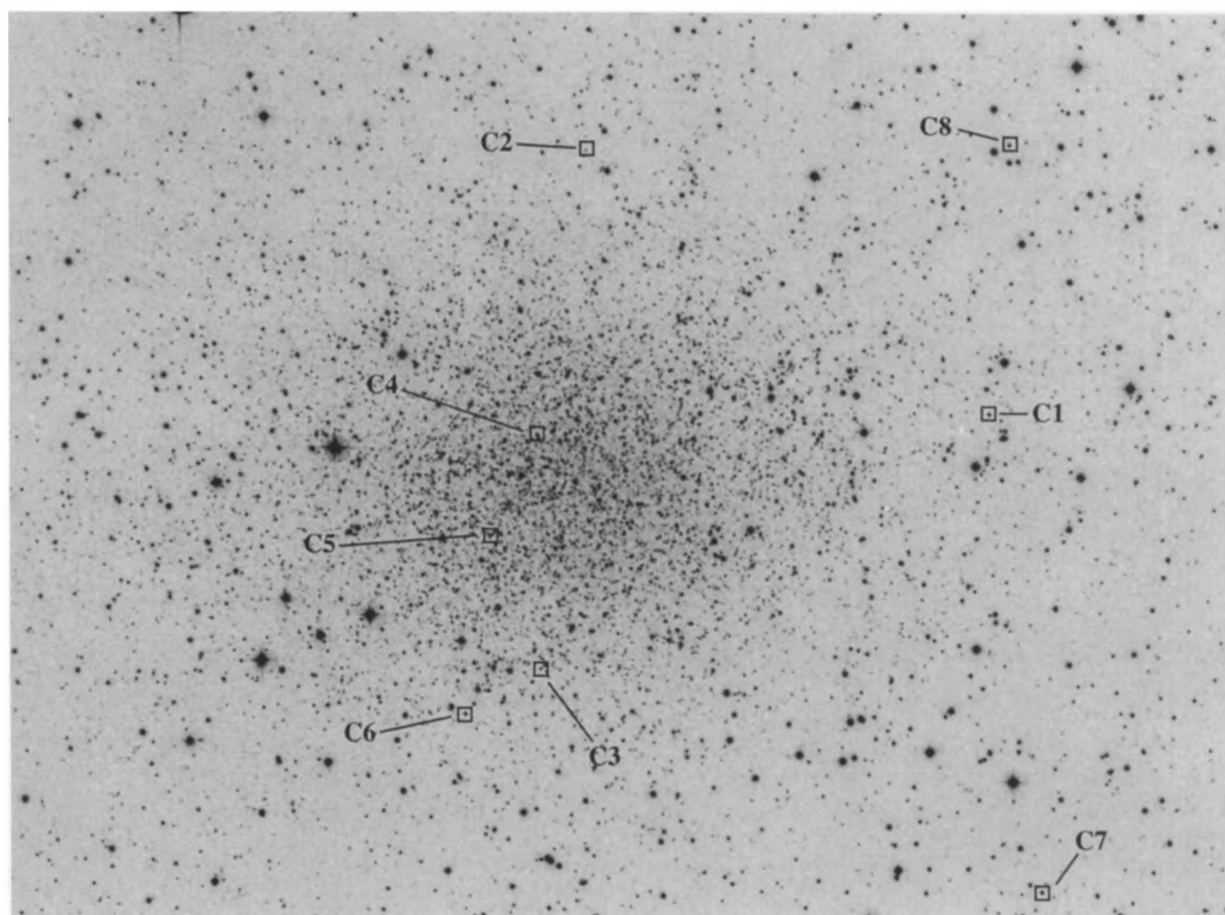
Dust clouds: none

Source:

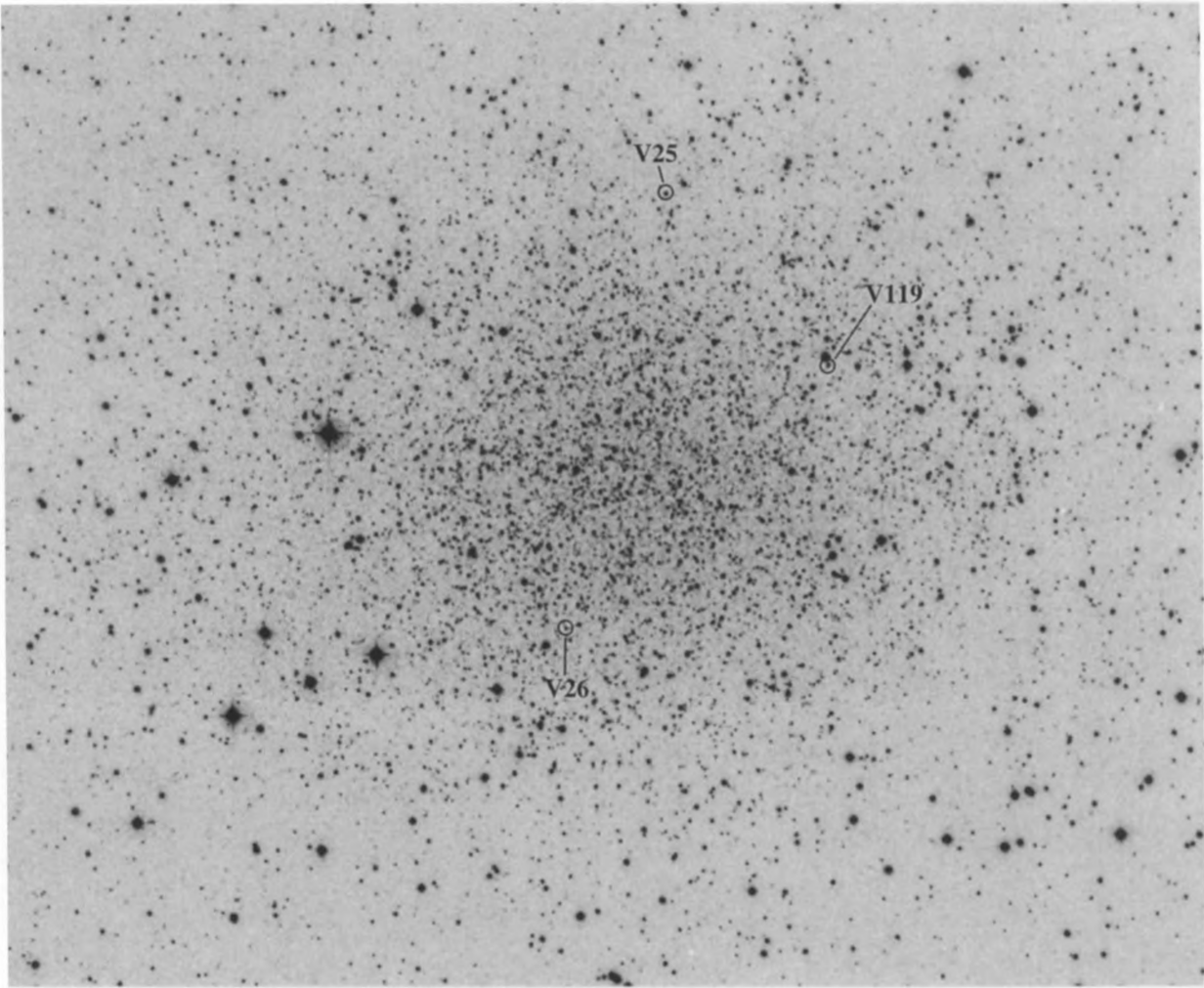
Sculptor**Chart 180**

Sculptor

Chart 181



Sculptor
Chart 182



Sculptor

References

1. Aaronson, M., & Mould, J. 1980, "Carbon Stars in the Fornax Dwarf Spheroidal Galaxy", *ApJ*, 240, 804.
2. Aaronson, M. & Olszewski, E.W. 1987, "Accurate Radial Velocities for Carbon Stars in the Sculptor Dwarf Spheroidal", *AJ*, 94, 657.
3. Armandroff, T.E., & Da Costa, G.S. 1986, "The Radial Velocity, Velocity Dispersion, and Mass-to-Light Ratio of the Sculptor Dwarf Galaxy", *AJ*, 92, 777.
4. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1985, "New Carbon Stars in Spheroidal Galaxies. I. Sculptor, Carina, Leo I and Leo II Systems", *A&A*, 144, 388.
5. Azzopardi, M., Lequeux J., & Westerlund, B.E. 1986, "New Carbon Stars in Spheroidal Galaxies. II. Draco, Ursa Minor, and New Data on Sculptor, Carina, and Leo I", *A&A*, 161, 232.
6. Baade, W., & Hubble, E. 1939, "The New Stellar Systems in Sculptor and Fornax", *PASP*, 51, 6.
7. Bono, G., Caputo, F., Santolamazza, P., Cassisi, S., & Piersimoni, A. 1997, "Evolutionary Scenario for Metal-Poor Pulsating Stars. II. Anomalous Cepheids", *AJ*, 113, 2209.
8. Cowley, A.P., Hartwick, F.D.A., & Sargent, W.L.W. 1997, "Spectra of Giant Stars in Distant Satellites of the Galaxy", *ApJ*, 220, 453.
9. Da Costa, G.S. 1984, "The Age(s?) of the Sculptor Dwarf Galaxy", *ApJ*, 285, 483.
10. Demers, S., Kunkel, W.E., & Krautter, A. 1980, "The Structure of the Sculptor System", *AJ*, 85, 1587.
11. Eskridge, P.B. 1988, "The Global Luminosity Function of the Sculptor Dwarf Elliptical Galaxy", *AJ*, 95, 445.
12. Eskridge, P.B. 1988, "The Structure of the Sculptor Dwarf Elliptical Galaxy. I. The Radial Profile", *AJ*, 95, 1706.
13. Eskridge, P.B. 1988, "The Structure of the Sculptor Dwarf Elliptical Galaxy. II. Two Dimensional Structure", *AJ*, 96, 1336.
14. Faber, S.M., & Lin, D.N.C. 1983, "Is there Nonluminous Matter in Dwarf Spheroidal Galaxies?", *ApJ*, 266, L17.
15. Frogel, J.A., Blanco, V.M., & McCarthy, M.F. 1982, "The Late Type Stellar Content of the Fornax and Sculptor Dwarf Galaxies", *ApJ*, 252, 133.
16. Grebel, E.K., Roberts, W.J., & van de Rydt, F. 1994, "Population Studies in Dwarf Spheroidal Galaxies: Washington Photometry of Sculptor and Fornax", in *The Local Group: Comparative and Global Properties*, edited by A. Layden, R.C. Smith, and J. Storm (European Southern Observatory, Munich), p. 148.
17. Hodge, P.W. 1961, "The Distribution of Stars in the Sculptor Dwarf Galaxy", *AJ*, 66, 384.
18. Hodge, P.W. 1965, "A Color-Magnitude Diagram for the Sculptor Dwarf Galaxy", *ApJ*, 142, 1390.
19. Hodge, P.W. 1966, "Surface Photometry of the Sculptor Dwarf Galaxy", *AJ*, 71, 204.
20. Innanen, K.A., & Papp, K.A. 1979, "Extratidal Variables and the Dynamics of the Sculptor Dwarf Galaxy", *AJ*, 84, 601.
21. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.

22. Kalużny, J., Kubiak, M., Szymański, M., Udalski, A., Krzemiński, W., & Mateo, M. 1995 OGLE Catalogue of Variable Stars in the Sculptor Dwarf Spheroidal", A&AS, 112, 407.
23. Kunkel, W.E., & Demers, S. 1977, "The Sculptor Dwarf Galaxy: Photoelectric Sequence and a Preliminary Color-Magnitude Diagram", ApJ, 214, 21.
24. Light, R.M., 1987, "Measurement of Abundances and their Variations in Dwarf Spheroidal Galaxies", BAAS, 19, 1033.
25. Nemec, J.M., Nemec, A.F.L., & Lutz, T.E. 1994, "Period-Luminosity-Metallicity Relations, Pulsation Modes, Absolute Magnitudes, and Distances for Population II Variable Stars", AJ, 108, 222.
26. Norris, J., & Bessell, M.S. 1978, "Abundance Variations on the Giant Branches of the Sculptor and Ursa Minor Dwarf Spheroidal Galaxies and the ω Centauri Anomaly", ApJ, 225, L49.
27. Quelo, D., Dubath, P., & Pasquini, L. 1995, "A Kinematic Study of the Sculptor Dwarf Spheroidal Galaxy", A&A, 300, 31.
28. Richer, H.B., & Westerlund, B.E. 1983, "Carbon Stars in Local Group Galaxies", ApJ, 264, 114.
29. Schweitzer, A.E., Cudworth, K.M., Majewski, S.R., & Suntzeff, N.B. 1995, "The Absolute Proper Motion and a Membership Survey of the Sculptor Dwarf Spheroidal Galaxy", AJ, 110, 2747.
30. Seitzer, P., & Frogel, J.A. 1985, "Radial Velocities of Carbon Stars in Three Dwarf Spheroidal Galaxies", AJ, 90, 1796.
31. Shapley, H. 1938, "Two Stellar Systems of a New Kind", Nature, 142, 715.
32. Shapley, H. 1939, "Galactic and Extragalactic Studies. II. Notes on the Peculiar Stellar Systems in Sculptor and Fornax", Proceedings of the Natl. Acad. of Sci., 25, 565.
33. Smith, G.H., & Dopita, M.A. 1983, "The Chemical Inhomogeneity of the Sculptor Dwarf Spheroidal Galaxy", ApJ, 271, 113.
34. Smith, H.A., & Stryker, L.L. 1986, "Anomalous Cepheids in the Sculptor Dwarf Galaxy", AJ, 92, 328.
35. Swope, H.H. 1968, "Thirteen Periodic Variable Stars Brighter than the Normal RR Lyrae-Type Variables in Four Dwarf Galaxies", AJ, 73, S204.
36. van Agt, S. 1978, "The Sculptor Dwarf Spheroidal Galaxy. I. Discovery and Identification of Variable Stars", Pub. DDO, 3, 205.
37. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", ApJ, 428, 617.
38. Zinnecker, H. 1994, "ROSAT Observations Towards the Carina and Sculptor Dwarf Galaxies", in Dwarf Galaxies, edited by G. Meylan and P. Prugniel (European Southern Observatory, Munich), p. 231.

Sextans I

Alternate name(s):

Right Ascension (2000): 10h 13m 03s

Declination (2000): -01d 36.9m

Type: dE4

Apparent magnitude (V): 10.3

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V): 0.03

Absolute magnitude (M_V): -9.4

Distance (kpc): 86

Radial velocity (solar, km/sec): 227

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: 46; designation: V

Source: [9]

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: none

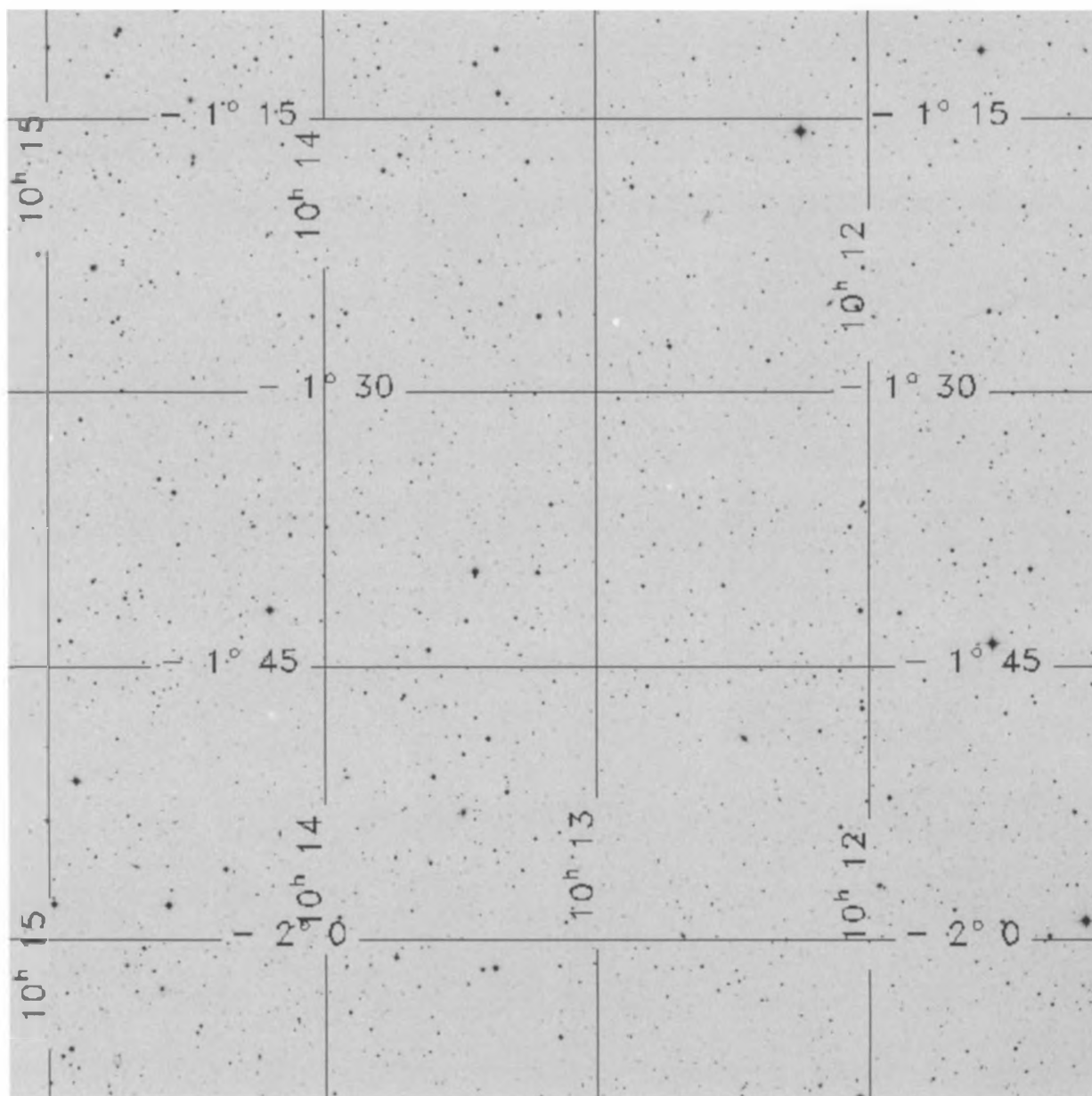
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Dust clouds: none

Source:

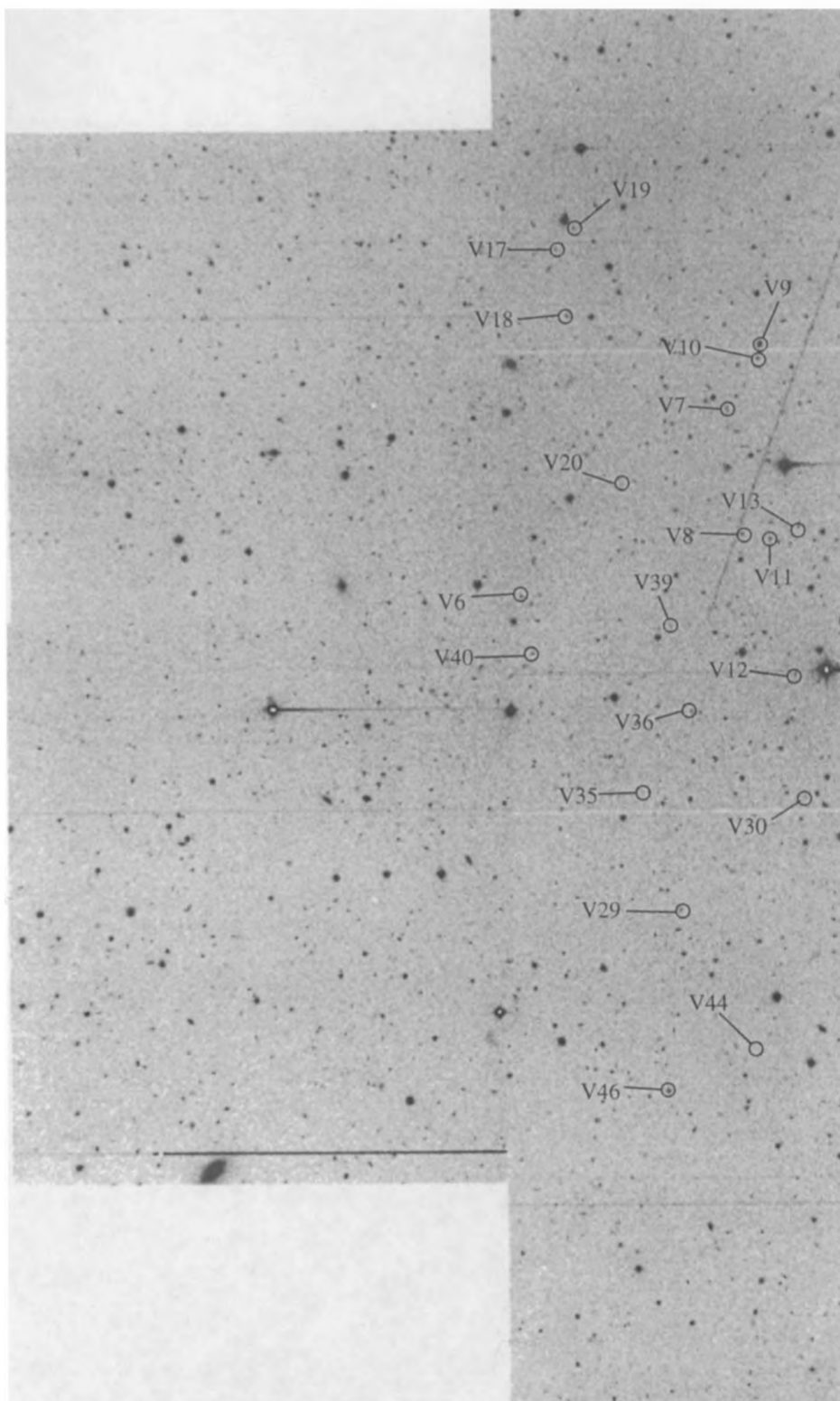
Sextans I

Chart 183



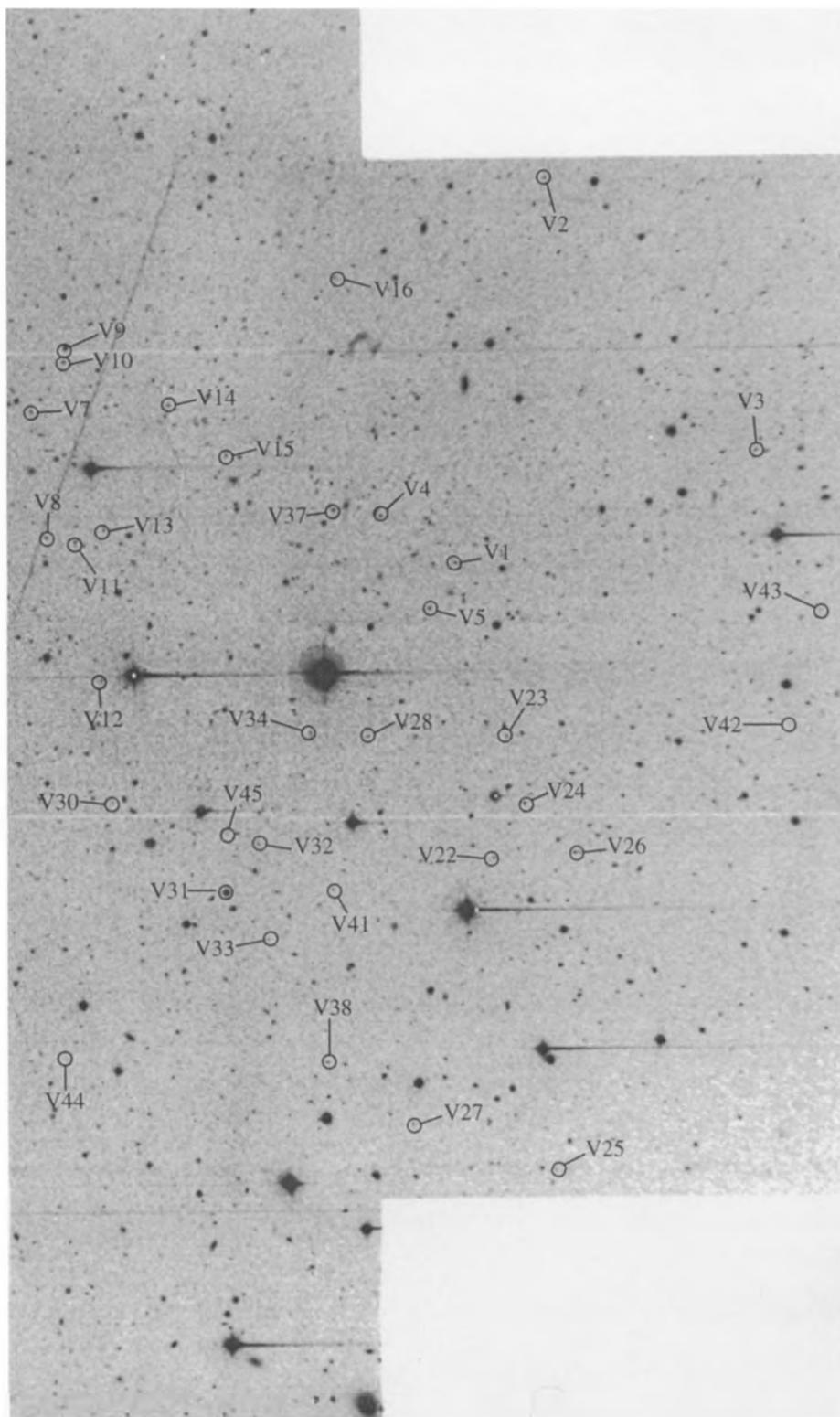
Sextans I

Chart 184



Sextans I

Chart 185



Sextans I

References

1. Bono, G., Caputo, F., Santolamazza, P., Cassisi, S., & Piersimoni, A. 1997, "Evolutionary Scenario for Metal-Poor Pulsating Stars. II. Anomalous Cepheids", *AJ*, 113, 2209.
2. Da Costa, G.S. 1992, "Dwarf Spheroidal Galaxies", in *The Stellar Populations of Galaxies*, IAU Symposium No. 149, edited by B. Barbuy and A. Renzini (Kluwer, Dordrecht).
3. Da Costa, G.S., Hatzidimitriou, D., Irwin, M.J., & McMahon, R.G. 1991, "The Radial Velocity and Metal Abundance of the Sextans Dwarf Spheroidal Galaxy", *MNRAS*, 249, 473.
4. Geisler, D., & Sarajedini, A. 1996, "Standards Giant Branches in the Washington System: Calibration and Application to the Draco, Ursa Minor, and Sextans Dwarf Spheroidal Galaxies", in *Formation of the Galactic Halo...Inside and Out*, edited by H. Morrison, and A. Sarajedini (Astronomical Society of the Pacific, San Francisco), p. 524.
5. Gould, A., Guhathakurta, P., Richstone, D., & Flynn, C. 1992, "Evidence for Dwarf Stars at $D \sim 100$ Kiloparsecs near the Sextans Dwarf Spheroidal Galaxy", *ApJ*, 388, 345.
6. Hargreaves, J.C., Gilmore, G., Irwin, M.J., & Carter, D. 1994, "A Dynamical Study of the Sextans Dwarf Spheroidal Galaxy", *MNRAS*, 269, 957.
7. Irwin, M.J., Bunclark, P.S., Bridgeland, M.T., & McMahon, R.G. 1990, "A New Satellite Galaxy of the Milky Way in the Constellation of Sextans", *MNRAS*, 244, 16P.
8. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
9. Mateo, M., Fischer, P., & Krzemiński, W. 1995, "Variable Stars in the Sextans Dwarf Spheroidal Galaxy", *AJ*, 110, 2166.
10. Mateo, M., Nemec, J., Irwin, M., & McMahon, R. 1991, "Deep CCD Photometry of the Sextans Dwarf Galaxy", *AJ*, 101, 892.
11. Suntzeff, N.B., Mateo, M., Terndrup, D.M., Olszewski, E.W., Geisler, D., & Weller, W. 1993, "Spectroscopy of Giants in the Sextans Dwarf Spheroidal Galaxy", *ApJ*, 418, 208.
12. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.
13. Weller, W., Mateo, M., & Krzemiński, W. 1991, "The RR Lyr Stars of the Sextans Dwarf Spheroidal Galaxy", *BAAS*, 23, 877.

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Sextans A

Alternate name(s): DDO 75

Right Ascension (2000): 10h 11m 06S

Declination (2000): -04d 42.5m

Type: dIrr

Apparent magnitude (V): 11.30

Color (B-V): 0.38

(U-B): -0.32

(V-R):

Color Excess, E(B-V): 0.03

Absolute magnitude (M_V): -14.6

Distance (kpc): 1440

Radial velocity (solar, km/sec): 325

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: 6; designation: A

Source: [this atlas]

Variable stars: 8; designation: V

Source: [24]

Carbon stars: none

Source:

HII regions: 25; designation: Arabic numerals

Source: [7]

Planetary nebulae: 1; designation PN1

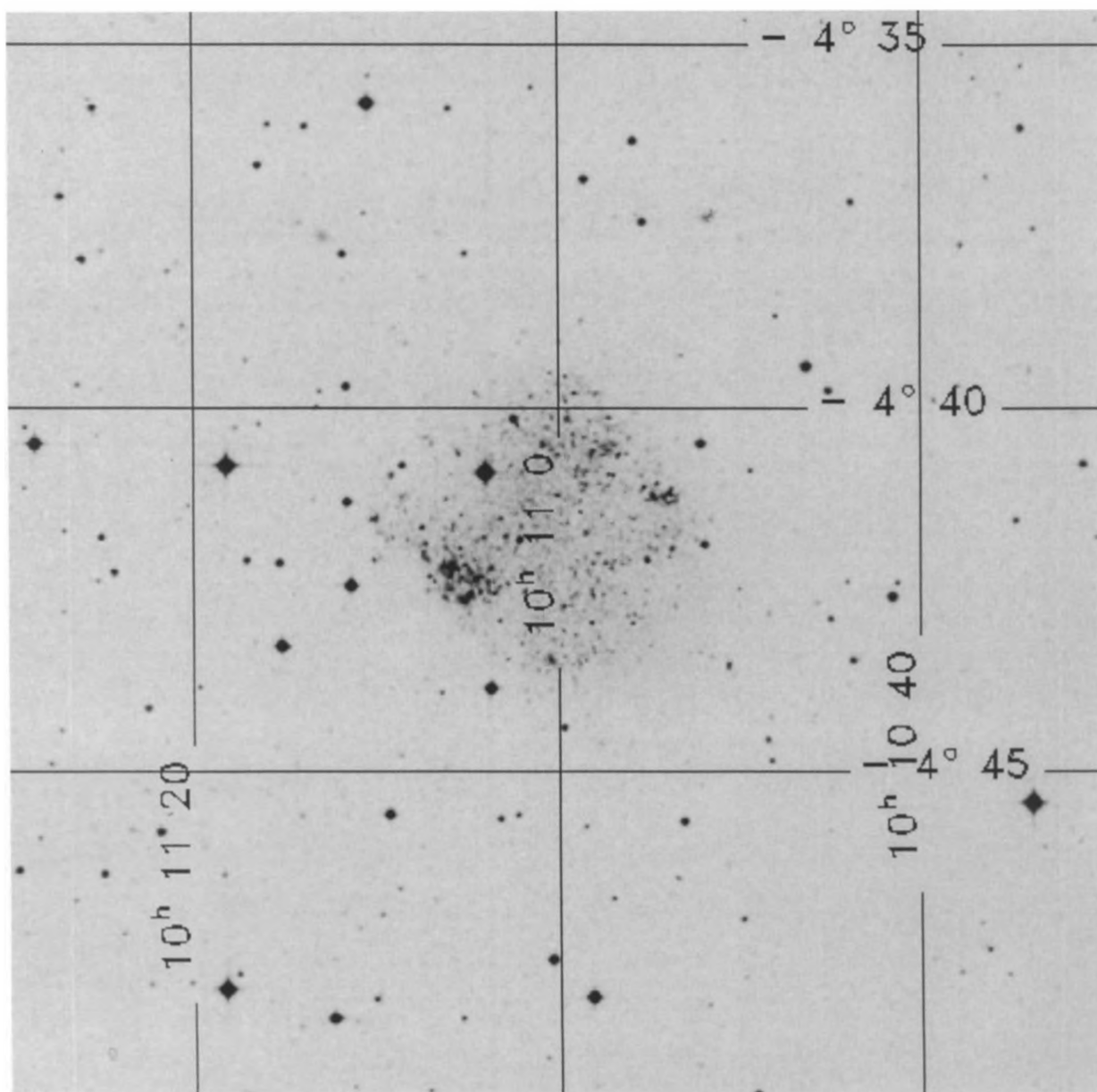
Source: [17]

Dust clouds: none

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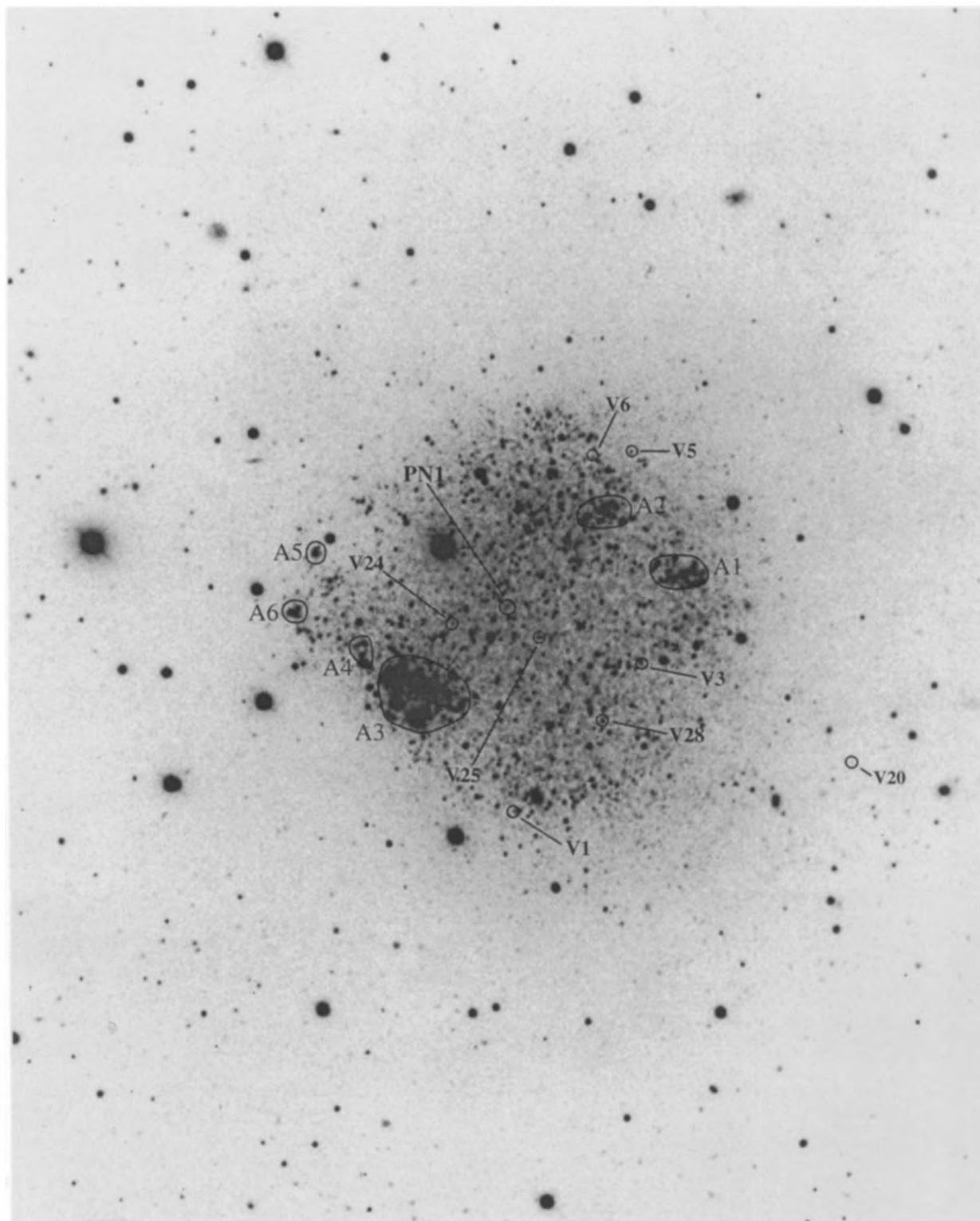
Sextans A

Chart 186

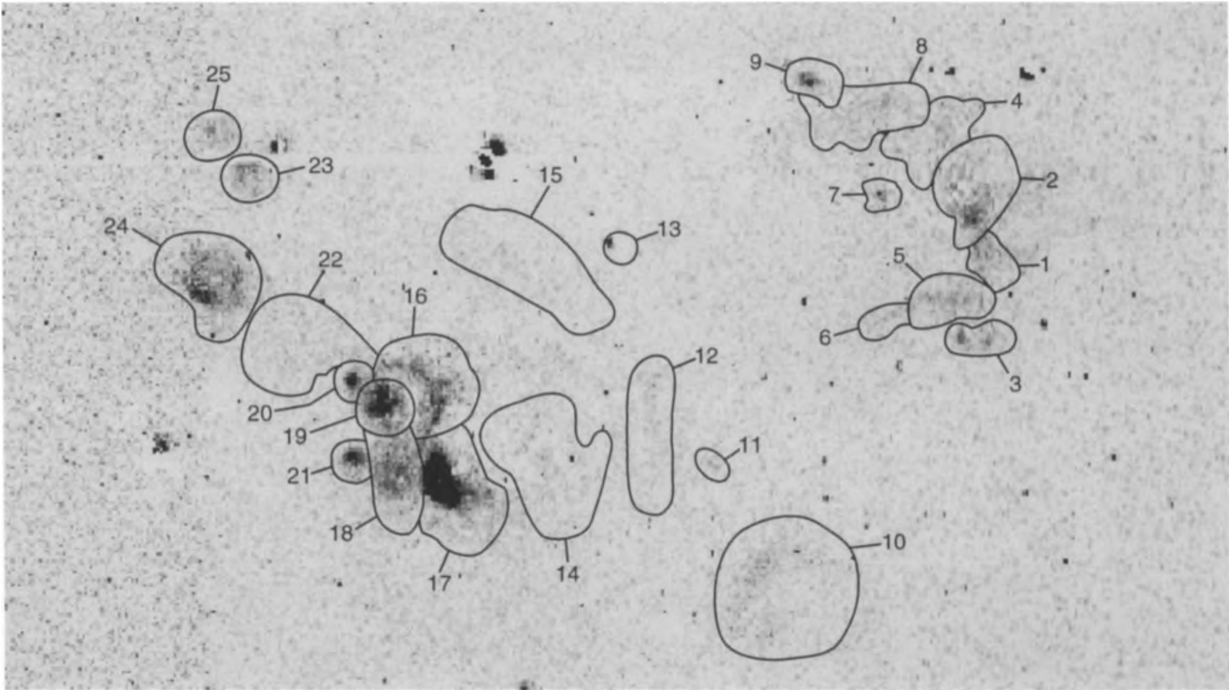


Sextans A

Chart 187



Sextans A
Chart 188



Sextans A

References

1. Ables, H.D. 1971, "Optical Study of Nearby Galaxies", Pub. of the U.S. Naval Observatory, Vol. 20, Part 4, 7.
2. Aparicio, A., García-Pelayo, J.M., Moles, M., & Melnick, J. 1987, "CCD Photometry of Resolved Dwarf Irregular Galaxies. I. Sextans A", A&AS, 71, 297.
3. Aparicio, A., Rodríguez-Ulloa, J.A. 1992, "H II Regions in Sextans A", A&A, 260, 77.
4. Elias, J.H., & Frogel, J.A. 1985, "M Supergiants in Local Group Irregular Galaxies: Metallicities and Distances", ApJ, 289, 141.
5. Fisher, J.R., & Tully, R.B. 1979, "Photographs of Dwarf Irregular Galaxies in the Vicinity of the Local Group and the M81 Group", AJ, 84, 62.
6. Freedman, W.L. 1986, "Recent CCD Observations of Cepheids in Nearby Galaxies: A Progress Report", in Galaxy Distances and Deviations from Universal Expansion, edited by B.F. Madore and R.B. Tully (Reidel, Dordrecht), p. 21.
7. Hodge, P., Kennicutt, R.C., & Strobel, N. 1994, "The H II Regions of Sextans A", PASP, 106, 765.
8. Hoessel, J.G., Schommer, R.A., & Danielson, G.E. 1983, "Photometry of Resolved Galaxies. II. Sextans A", ApJ, 274, 577.
9. Huchtmeier, W.K., Seiradakis, J.H., & Materne, J. 1981, "The Neutral Hydrogen Distribution of Irregular Galaxies", A&A, 102, 134.
10. Hunter, D.A., & Gallagher, III, J.S. 1985, "Star-Forming Properties and Histories of Dwarf Irregular Galaxies: Down but not Out", ApJS, 58, 533.
11. Hunter, D.A., & Gallagher, III, J.S. 1990, "Properties of Ionized Interstellar Froth in Irregular Galaxies", ApJ, 362, 480.
12. Hunter, D.A., & Gallagher, II, J.S. 1992, "Supergiant Filaments of Ionized Gas in Irregular Galaxies", ApJ, 391, L9.
13. Hunter, D.A., & Gallagher, III, J.S. 1997, "An Emission-Line Study of Supergiant Ionized Filaments in Irregular Galaxies", ApJ, 475, 65.
14. Hunter, D.A., Gallagher, III, J.S., Rice, W.L., & Gillett, F.C. 1989, "IRAS Observations of a Large Sample of Normal Irregular Galaxies", ApJ, 336, 152.
15. Hunter, D.A., Hawley, W.N., & Gallagher, III, J.S. 1993, "A Survey for Extra-H II Region Ionized Gas Structures in Irregular Galaxies", AJ, 106, 1797.
16. Hunter, D.A., & Plummer, J.D. 1996, "Sextans A: A Case of Star Formation and Gas Densities in Irregular Galaxies", ApJ, 462, 732.
17. Jacoby, G.H., & Lesser, M.P. 1981, "Distances to Nearby Galaxies Derived from Planetary Nebulae", AJ, 86, 185.
18. Madore, B.F., & Freedman, W.L. 1991, "The Cepheid Distance Scale", PASP, 103, 933.
19. Ohta, K., Tomita, A., & Saitō, M. 1993, "CO-to-H₂ Conversion factor in Dwarf Irregular Galaxies", PASJ, 45, L21.
20. Piotto, G., Capaccioli, M., & Pellegrini, C. 1994, "On the Cepheid Variables of Nearby Galaxies. II. Sextans A and Sextans B", A&A, 287, 371.
21. Rowan-Robinson, M., Phillips, T.G., & White, G. 1980, "A Survey of Nearby Galaxies for CO", A&A, 82, 381.

22. Sakai, S., Madore, B.F., & Freedman, W.L. 1996, "Tip of the Red Giant Branch Distances to Galaxies. III. The Dwarf Galaxy Sextans A", *ApJ*, 461, 713.
23. Sandage, A., & Carlson, G. 1982, "Distance and Absolute Magnitudes of the Brightest Stars in the Dwarf Galaxy Sextans A", *ApJ*, 258, 439.
24. Sandage, A., & Carlson, G. 1985, "The Brightest Stars in Nearby Galaxies. V. Cepheids and the Brightest Stars in the Dwarf Galaxy Sextans B Compared to those in Sextans A", *AJ*, 90, 1019.
25. Skillman, E.D., Kennicutt, R.C., & Hodge, P.W. 1989, "Oxygen Abundances in Nearby Dwarf Irregular Galaxies", *ApJ*, 347, 875.
26. Skillman, E.D., Terlevich, R., Teuben, P.J., & van Woerden, H. 1988, "H I Synthesis Observations of the Dwarf Irregular Galaxy Sextans A", *A&A*, 198, 33.
27. Skillman, E.D., Terlevich, R., & van Woerden, H. 1986, "H I Observations of Sextans A", in *Star Forming Dwarf Galaxies and Related Objects*, edited by D. Kunth, T. Thuan, and J. Van (Editions Frontieres, Gif-sur-Yvette), p. 263.
28. Tomita, A., Ohta, K., & Saitō, M. 1993, "H-Alpha Velocity Fields of Giant H II Regions in Four Nearby Dwarf Irregular Galaxies", *PASJ*, 45, 693.
29. Visvanathan, N. 1989, "The Zero Point of the Cepheid Period-Luminosity Relation in the 1.05 Micron Wave Band", *ApJ*, 346, 629.
30. Walker, A.R. 1987, "Studies of the Dwarf Irregular Galaxies. I. *B* and *V* CCD Photometry of the Brighter Stars in Sextans A", *MNRAS*, 224, 935.
31. Walker, A.R. 1987, "Notes on Cepheid Variables in Galaxies More Distant Than the Magellanic Clouds", *S. African Astron. Obs. Circ.*, 11, 125.

Sextans B

Alternate name(s): DDO 70

Right Ascension (2000): 10h 00m 00s

Declination (2000): +5d 19.7m

Type: dIrr

Apparent magnitude (V): 11.43

Color (B-V): 0.48

(U-B): -0.16

(V-R):

Color Excess, E(B-V): 0.01

Absolute magnitude (M_V): -14.2

Distance (kpc): 1345

Radial velocity (solar, km/sec): 303

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: 3; designation: A

Source: [this atlas]

Variable stars: 7; designation: V

Source: [7], [9]

Carbon stars: none

Source:

HII regions: 12; designation: Arabic numerals

Source: [12]

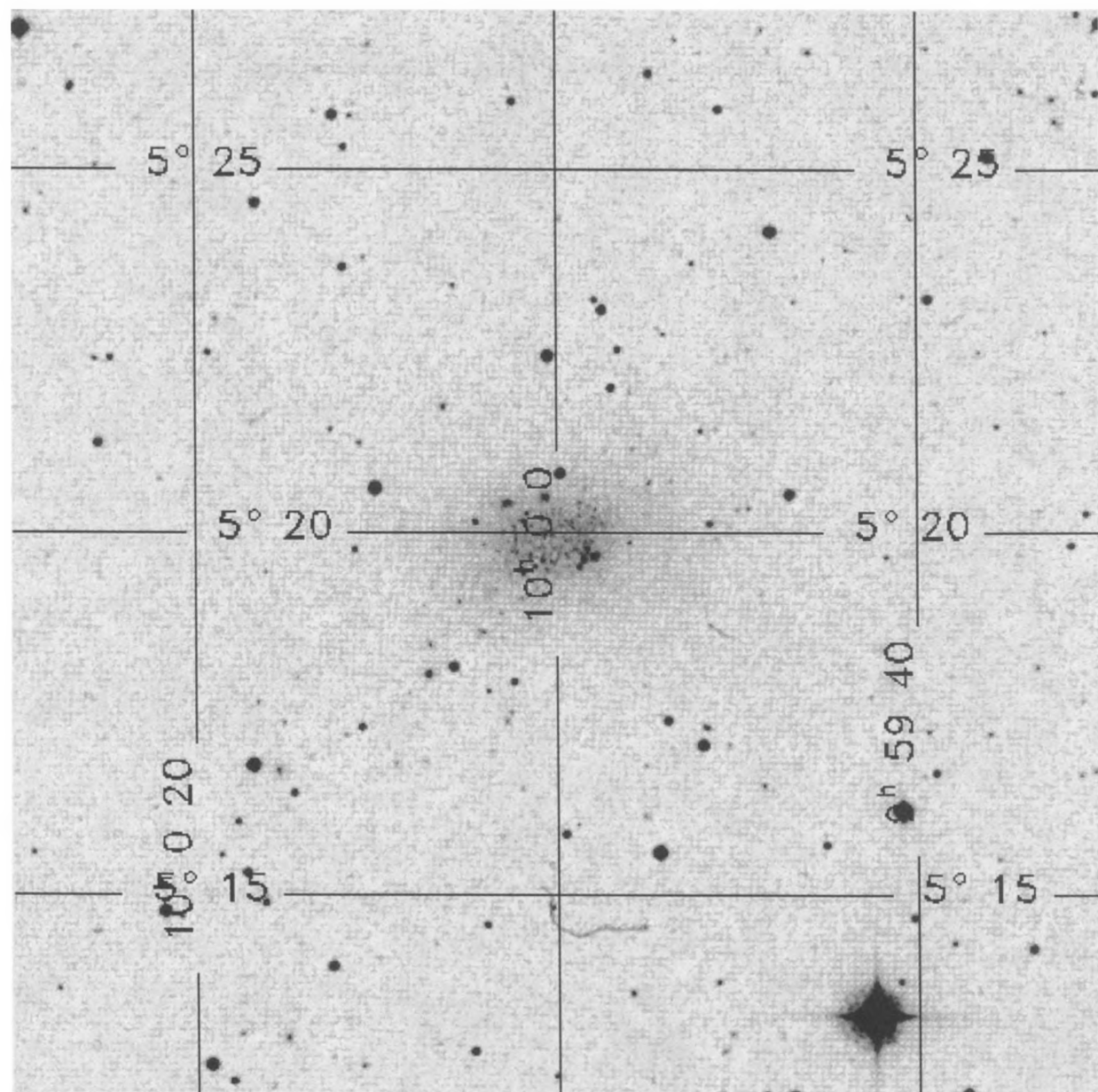
Planetary nebulae: none

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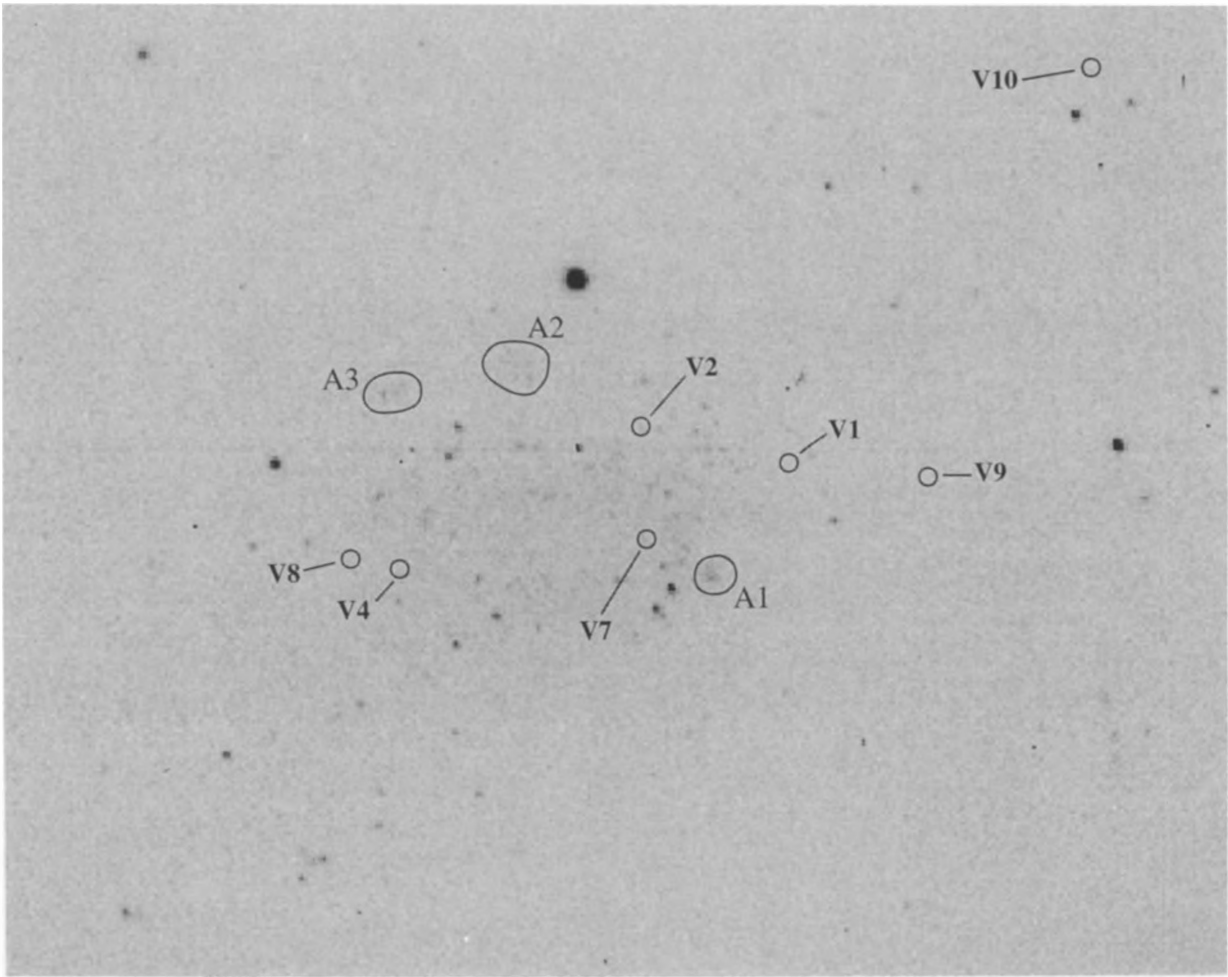
Dust clouds: none

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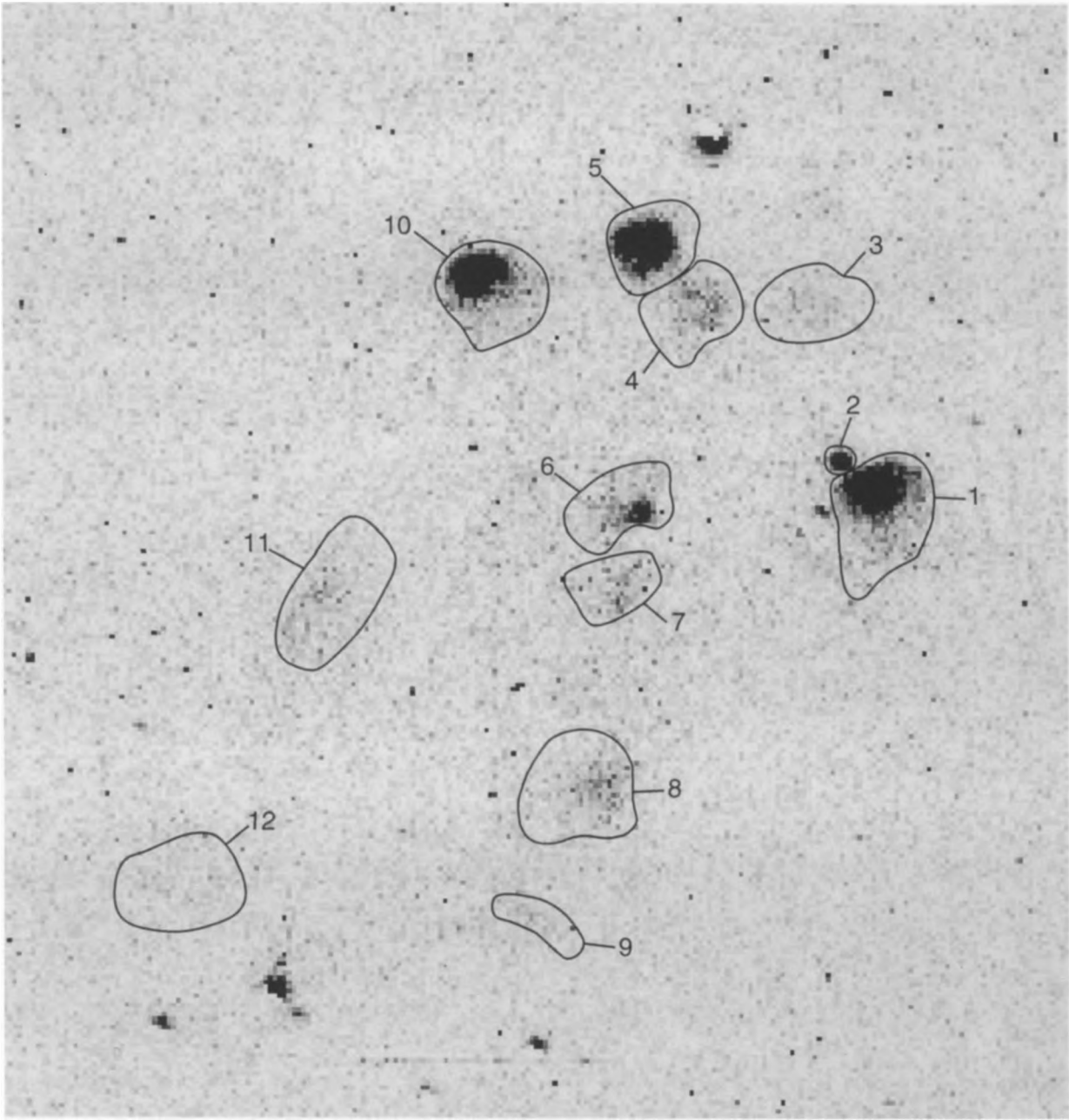
Sextans B
Chart 189



Sextans B
Chart 190



Sextans B
Chart 191



Sextans B

References

1. Comte, G., Lequeux, J., & Viallefond, F. 1985, "VLA Observations of Dwarf Galaxies", in *Star-Forming Dwarf Galaxies and Related Objects*, edited by D. Kunth, T.X. Thuan, and J.T.T. Van (Editions Frontiers, Gif-sur-Yvette), p. 273.
2. Fisher, J.R., & Tully, R.B. 1979, "Photographs of Dwarf Irregular Galaxies in the Vicinity of the Local Group and the M81 Group", *AJ*, 84, 62.
3. Hoffman, G.L., Salpeter, E.E., Farhat, B., Roos, T., Williams, H., & Helou, G. 1996, "Arecibo H I Mapping of a Large Sample of Dwarf Irregular Galaxies", *ApJS*, 105, 269.
4. Hunter, D.A., Hawley, W.N., and Gallagher, III, J.S. 1993, "A Survey for Extra-H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
5. Madore, B.F., & Freedman, W.L. 1991, "The Cepheid Distance Scale", *PASP*, 103, 933.
6. Moles, M., Aparicio, A., and Masegosa, J. 1990, "The Metal Content of GR8 and Sextans B", *A&A*, 228, 310.
7. Piotto, G., Capaccioli, M., & Pellegrini, C. 1994, "On the Cepheid Variables of Nearby Galaxies. II. Sextans A and Sextans B", *A&A*, 287, 371.
8. Sakai, S., Madore, B.F., & Freedman, W.L. 1996, "Tip of the Red Giant Branch Distances to Galaxies. IV. Sextans B", *ApJ*, 480, 589.
9. Sandage, A., & Carlson, G. 1985, "The Brightest Stars in Nearby Galaxies. V. Cepheids and the Brightest Stars in the Dwarf Galaxy Sextans B Compared with those in Sextans A", *AJ*, 90, 1019.
10. Skillman, E.D., Kennicutt, R.C., & Hodge, P.W. 1989, "Oxygen Abundances in Nearby Dwarf Irregular Galaxies", *ApJ*, 347, 875.
11. Stasińska, G., Comte, G., & Vigroux, L. 1986, "Spectrophotometry of H II Regions in Irregular Galaxies", *A&A*, 154, 352.
12. Strobel, N.V., Hodge P.W., & Kennicutt, R.C. 1991, "H II Regions in Seven Dwarf Irregular Galaxies", *ApJ*, 383, 148.
13. Tosi, M., Greggio, L., & Focardi, P. 1989, "Star Formation in Dwarf Irregular Galaxies: Preliminary Results", *Ap&SS*, 156, 295.
14. Tosi, M., Greggio, L., Marconi, G., & Focardi, P. 1991, "Star Formation in Dwarf Irregular Galaxies: Sextans B", *AJ*, 102, 951.
15. Walker, A.R. 1987, "Notes on Cepheid Variables in Galaxies More Distant Than the Magellanic Clouds", *S. African Astron. Obs. Circ.*, 11, 125.

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Tucana

Alternate name(s): SGC 2238.5-6441

Right Ascension (2000): 22h 41m 50s

Declination (2000): -64d 25.2m

Type: dE5

Apparent magnitude (V): 15.15

Color (B-V): 0.7

(U-B):

(V-R): 0.55

Color Excess, E(B-V): 0.00

Absolute magnitude (M_V): -9.5

Distance (kpc): 880

Radial velocity (solar, km/sec):

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: none

Source:

Planetary nebulae: none

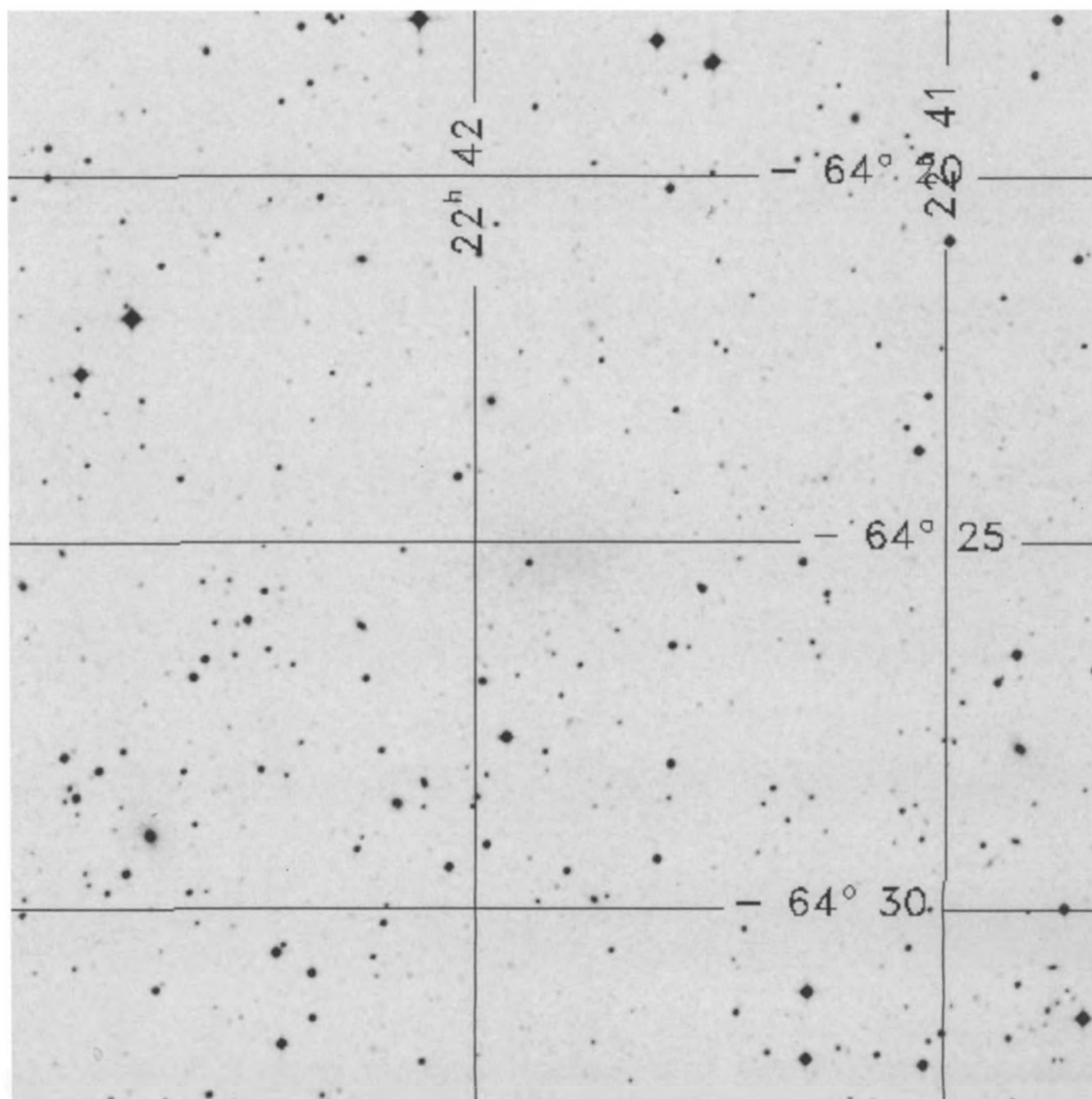
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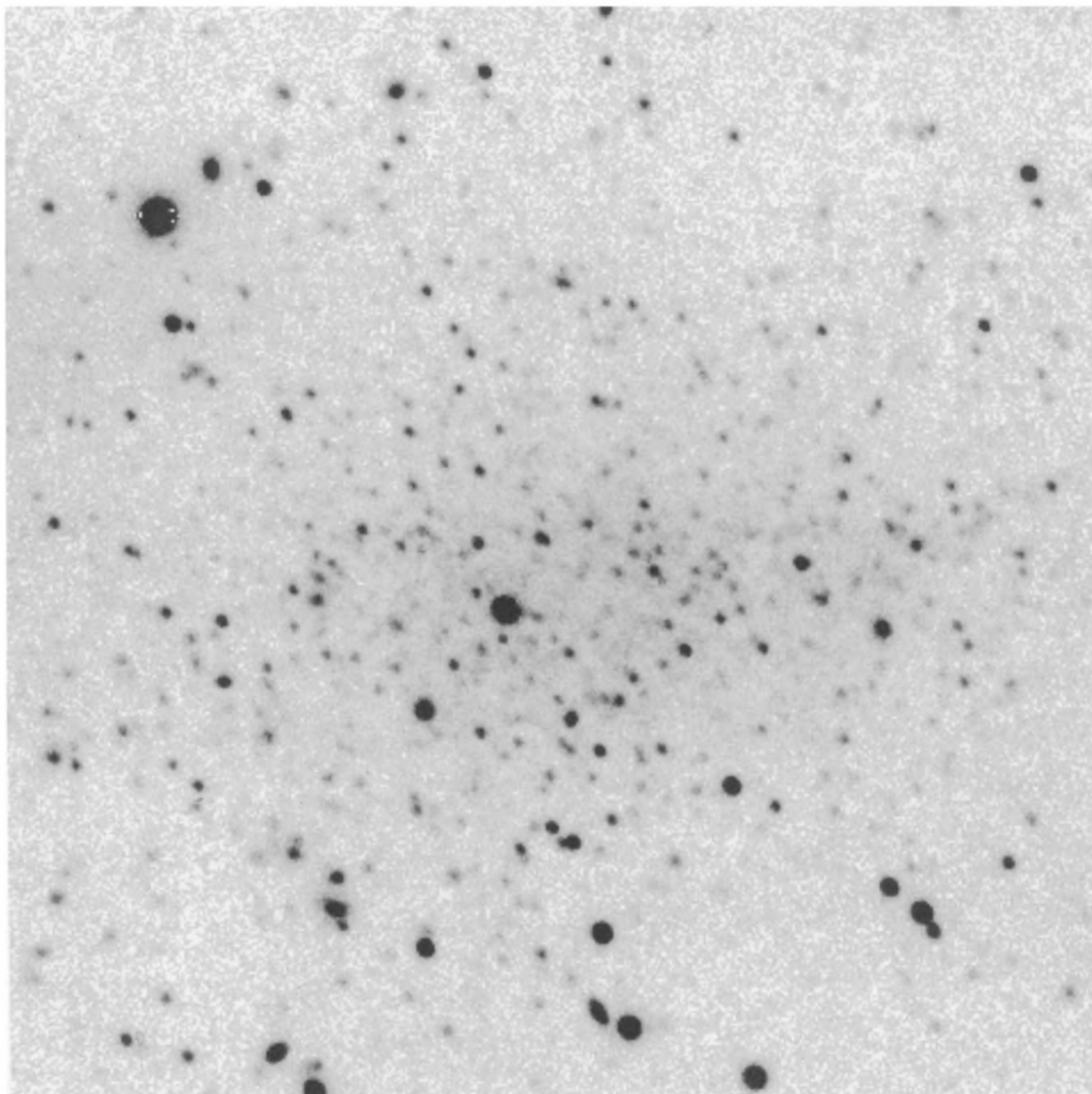
Dust clouds: none

Source:

Tucana

Chart 192



Tucana**Chart 193**

Tucana

References

1. Castellani, M., Marconi, G., & Buonanno, R. 1996, "The Tucana Dwarf Galaxy", A&A, 310, 715.
2. Da Costa, G.S. 1994, "New Results for Local Group Dwarf Galaxies", in Dwarf Galaxies, edited by G. Meylan, and P. Prugniel (European Southern Observatory, Munich), p. 221.
3. Lavery, R.J., & Mighell, K.J. 1992, "A New Member of the Local Group: The Tucana Dwarf Elliptical Galaxy", AJ, 103, 81.
4. Osterloo, T., Da Costa, G.S., & Staveley-Smith, L. 1996, "H I Observations of the Tucana Dwarf Elliptical Galaxy", AJ, 112, 1969.
5. Saviane, I., Held, E.V., & Piotto, G. 1996, "CCD Photometry of the Tucana Dwarf Galaxy", A&A, 315, 40.

UGC A92

Alternate name(s): EGB 0427+63

Right Ascension (2000): 04h 32m 01s

Declination (2000): +63d 36.4m

Type: dIrr

Apparent magnitude (V):

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V): 0.30

Absolute magnitude (M_V):

Distance (kpc): 796

Radial velocity (solar, km/sec): -99

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: none

Source:

Carbon stars: none

Source:

HII regions: 25; designation: Arabic numerals

Source: [2]

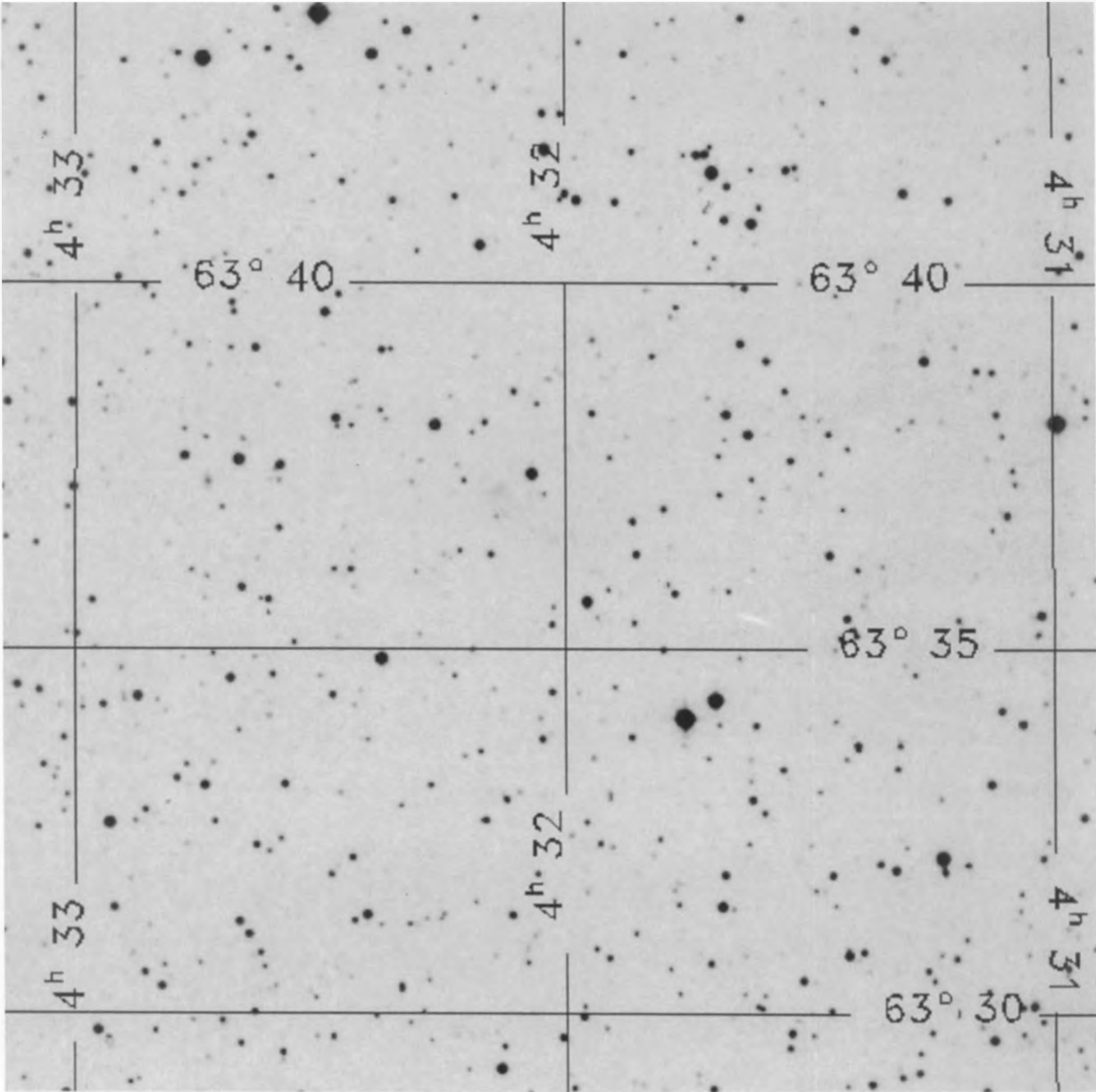
Planetary nebulae: none

Source:

Dust clouds: none

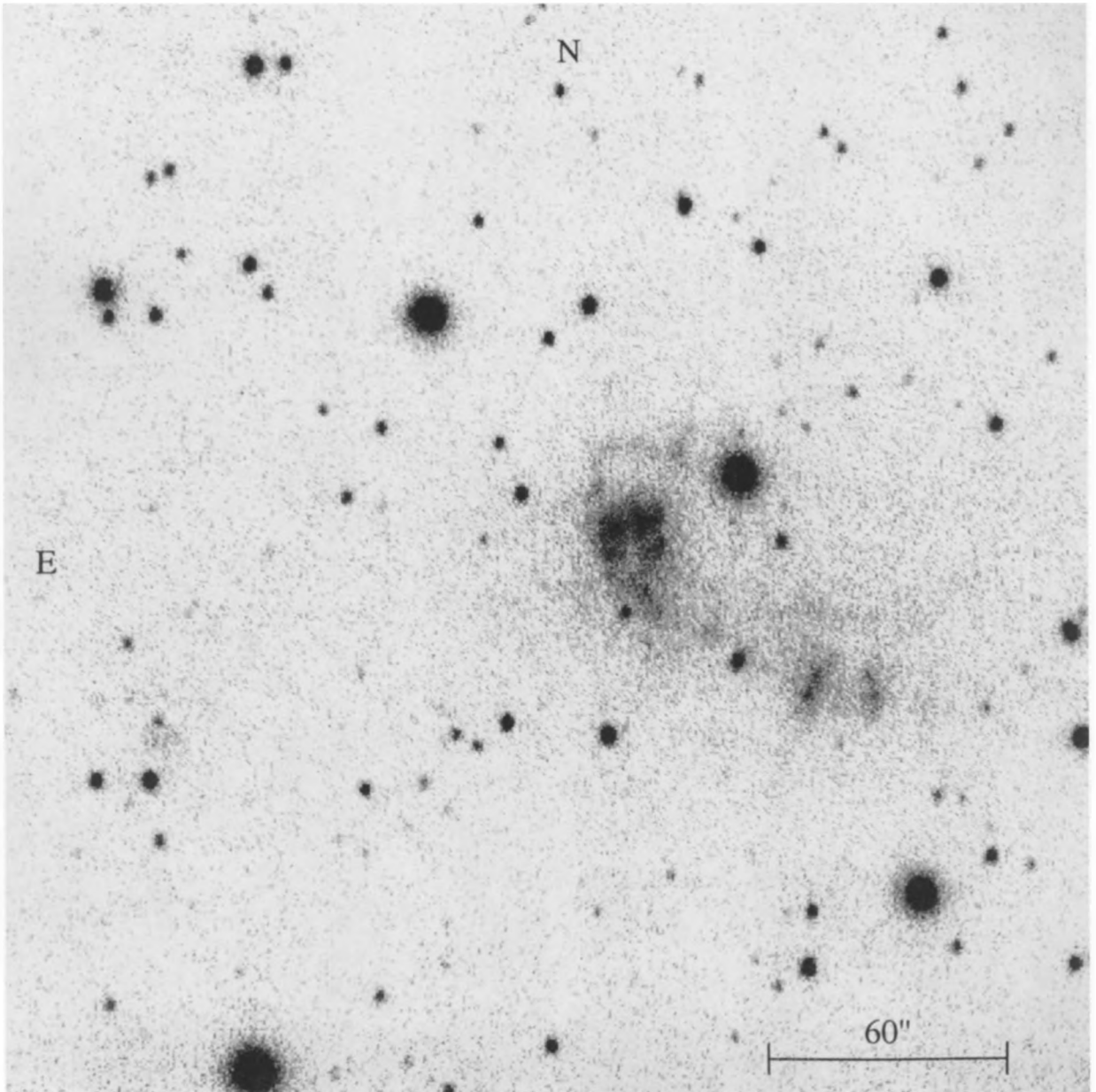
Source:

UGC A92
Chart 194

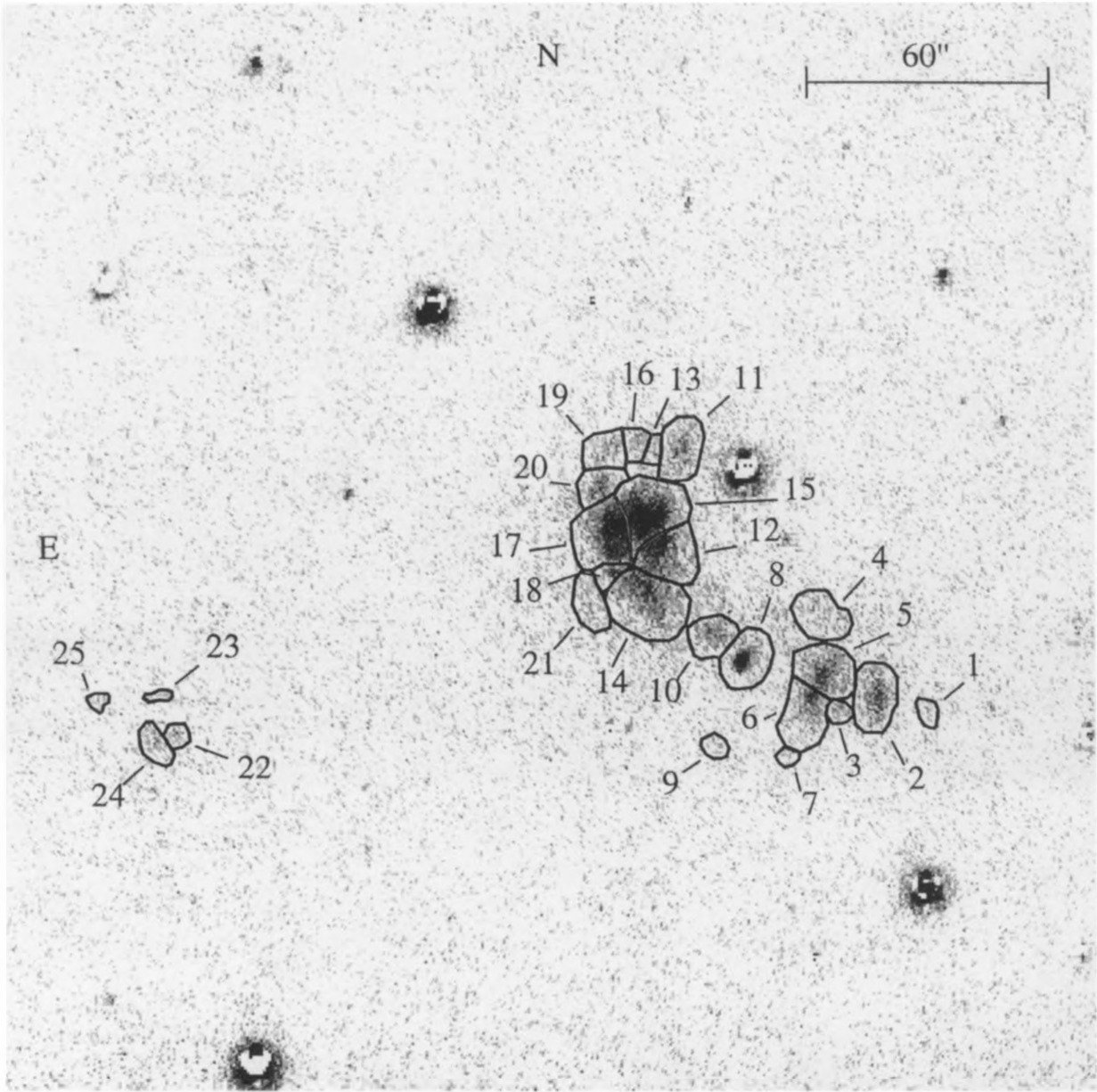


UGC A92

Chart 195



UGC A92
Chart 196



UGC A92

References

1. Ellis, G.L., Grayson, E.T., & Bond, H.E. 1984, "A Search for Faint Planetary Nebulae on Palomar Sky Survey Prints", *PASP*, 96, 283.
2. Hodge, P., & Miller, B.W. 1995, "H II Regions in Four Galaxies in and near the Local Group", *ApJ*, 451, 176.
3. Hoessel, J.G., Saha, A., & Danielson, G.E. 1988, "Deep CCD Observations of Nearby Dwarf Galaxy Candidates", *PASP*, 100, 680.
4. Karachentsev, I.D., Tikhonov, N.A., & Sazonova, L.N. 1994, "NGC 1569 and UGCA 92 - A Nearby Pair of Galaxies in the Milky Way", *Astron. Letters*, 20, 84.
5. Karachentseva, V.E., Prugniel, P., Vennik, L., Richter, G.M., Thuan, T.X., & Martin, J.M. 1996, "CCD and H I Observations of LSB Dwarf Galaxies in the General Field", *A&AS*, 117, 343.

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Ursa Minor

Alternate name(s): DDO 199

Right Ascension (2000): 15h 09m 11s

Declination (2000): +67d 12.9m

Type: dE5

Apparent magnitude (V): 10.3

Color (B-V): 1.25

(U-B): -0.33

(V-R):

Color Excess, E(B-V): 0.03

Absolute magnitude (M_V): -9.0

Distance (kpc): 66

Radial velocity (solar, km/sec): -248

Objects Identified On the Atlas:

Globular clusters: none

Source:

Open clusters: none

Source:

OB associations: none

Source:

Variable stars: 93; designations: Arabic numerals

Source: [26]

Carbon stars: 2; designations: star K, V335

Source: [4], [6]

HII regions: none

Source:

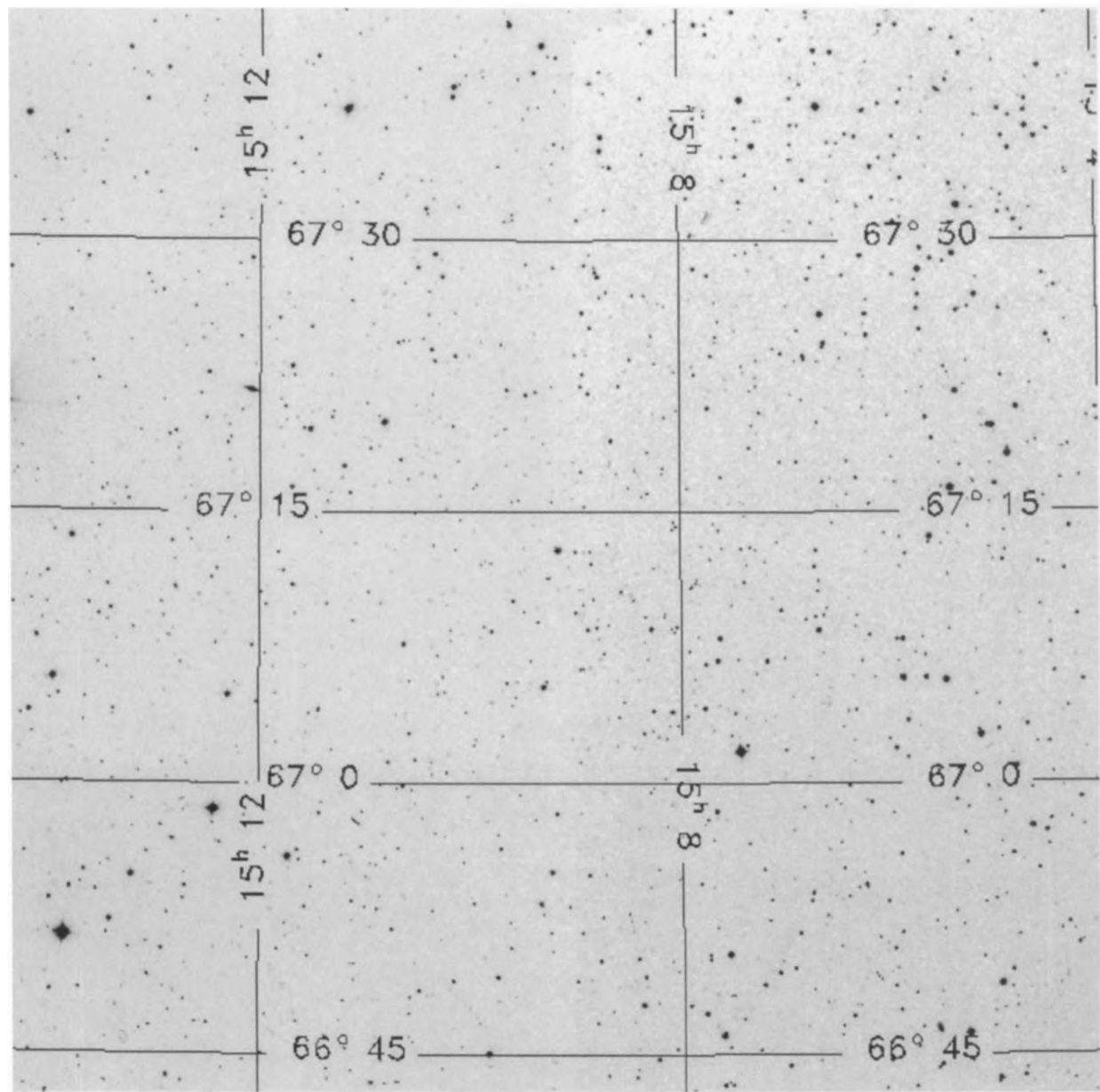
Planetary nebulae: none

Source:

Dust clouds: none

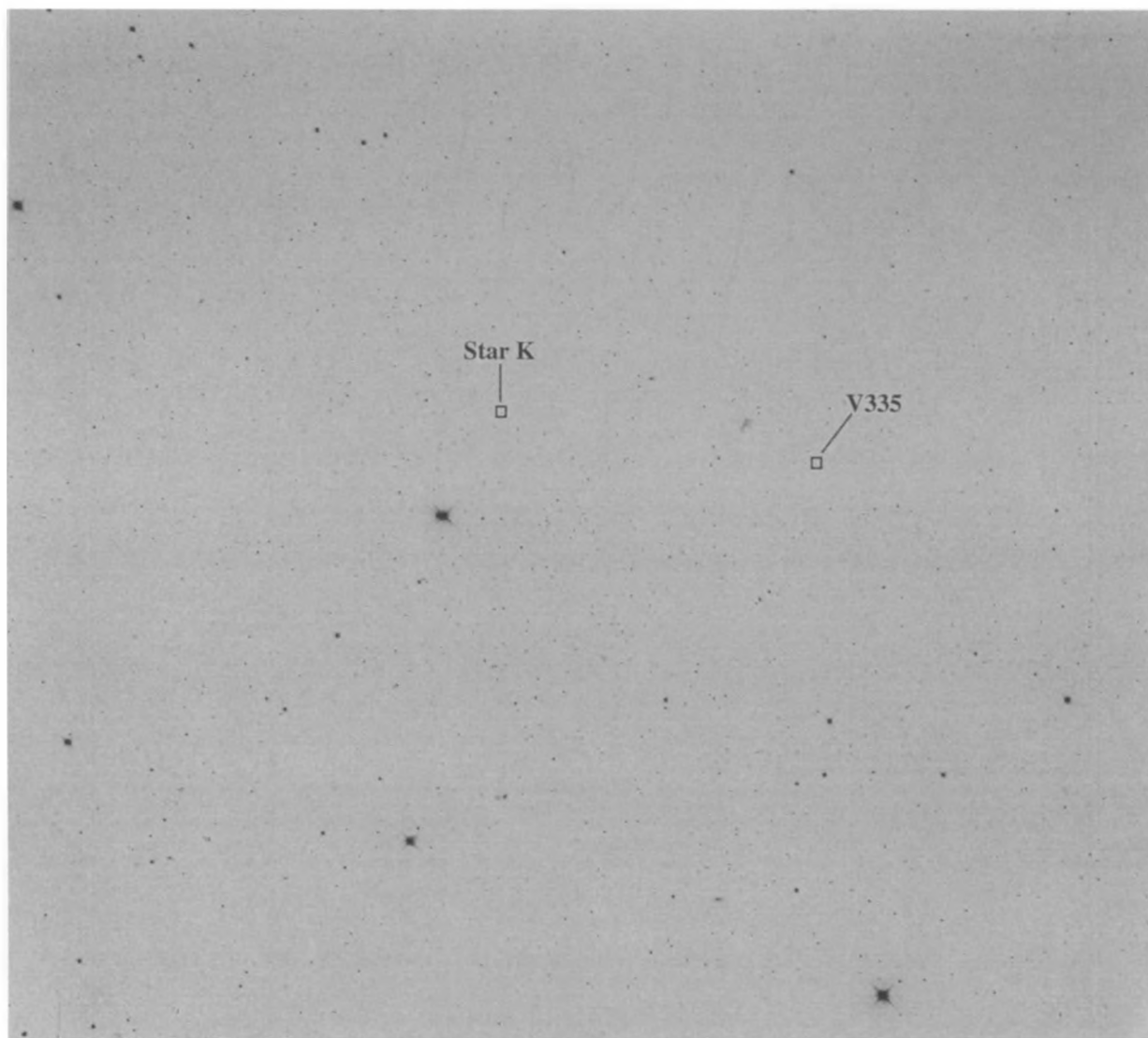
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Ursa Minor
Chart 197



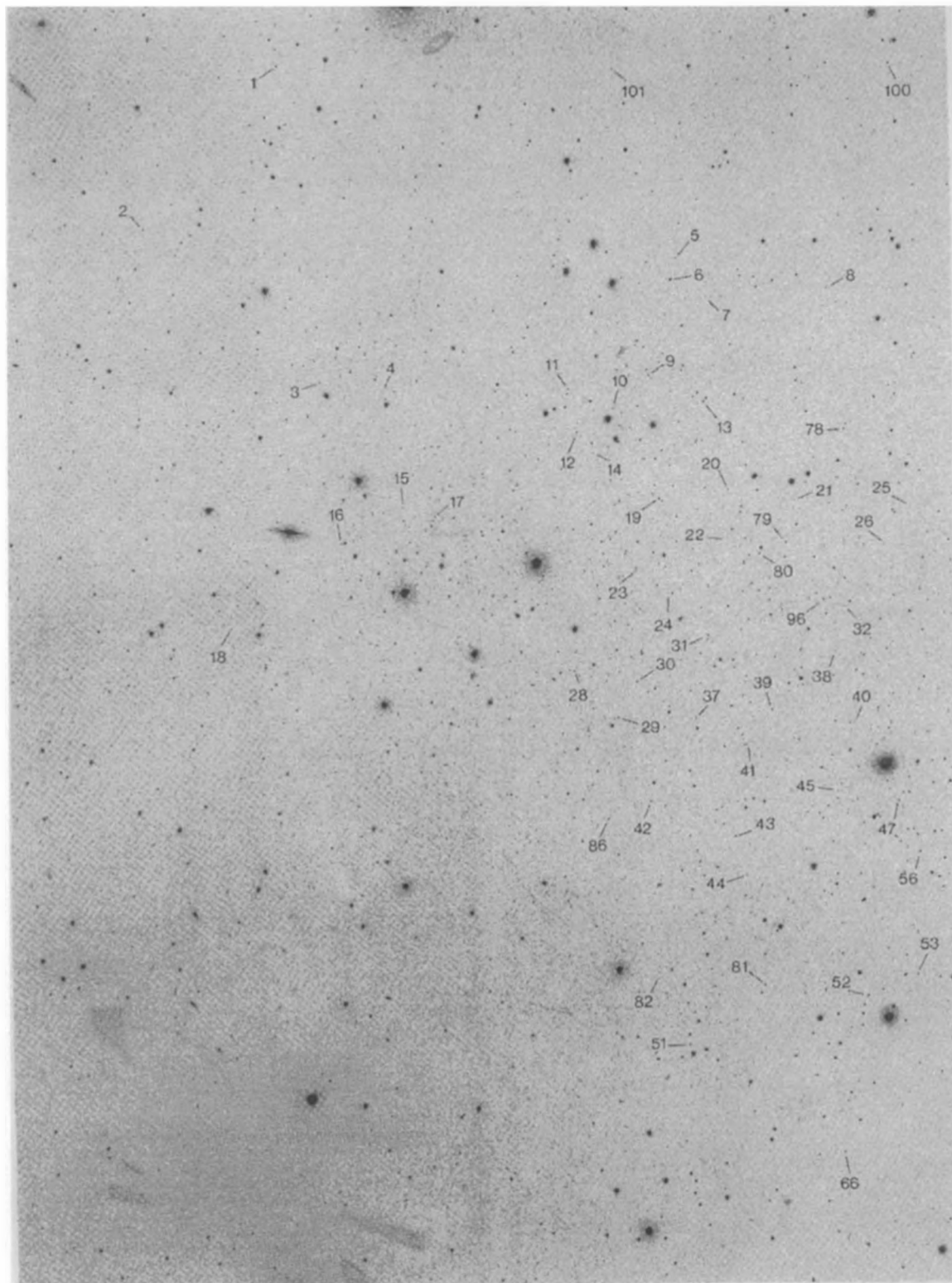
Ursa Minor

Chart 198



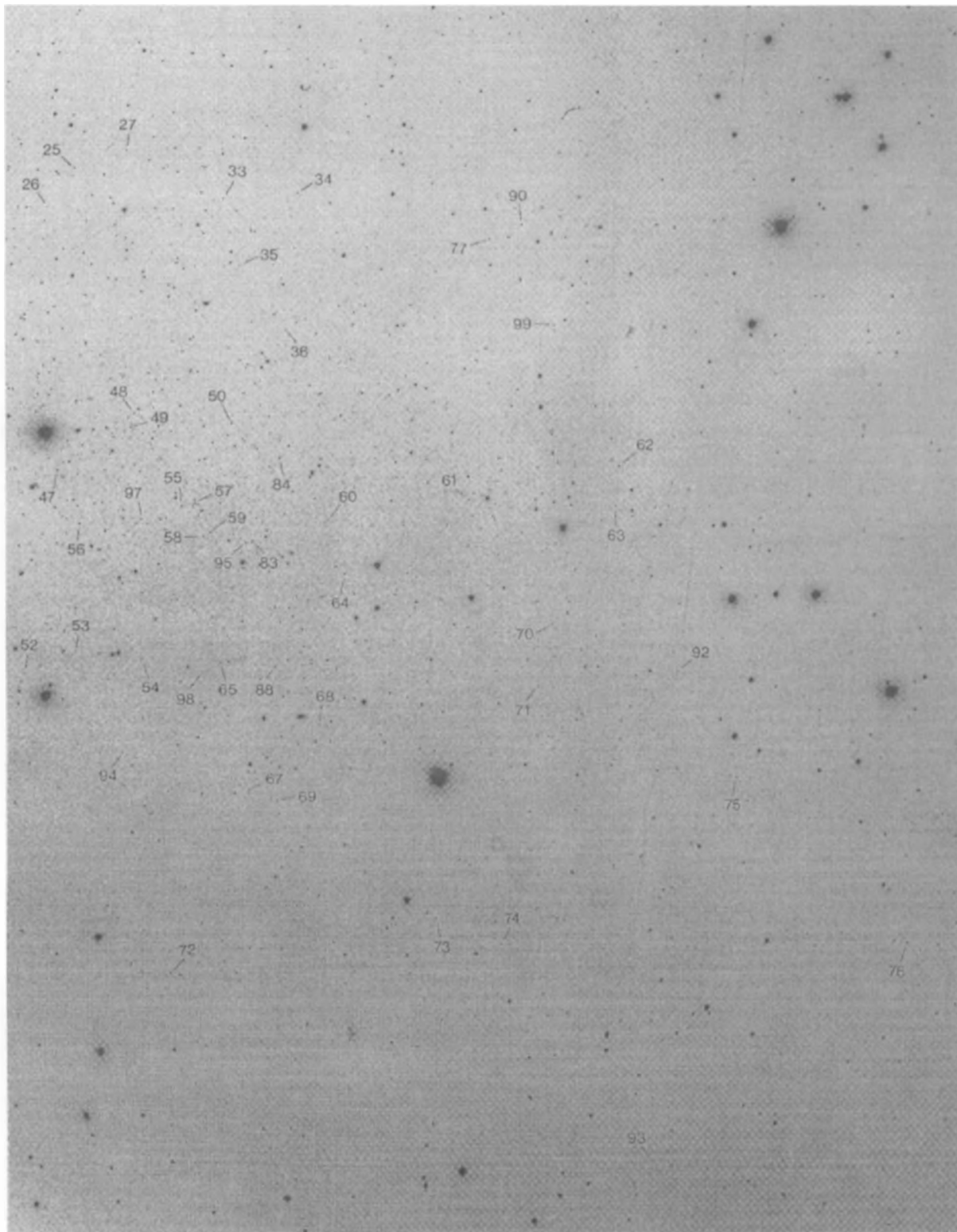
Ursa Minor

Chart 199



Ursa Minor

Chart 200



Ursa Minor

References

1. Aaronson, M. 1983, "Accurate Radial Velocities for Carbon Stars in Draco and Ursa Minor: The First Hint of a Dwarf Spheroidal Mass-to-Light Ratio", *ApJ*, 266, L11.
2. Aaronson, M., & Mould, J. 1985, "Infrared Photometry and the Comparative Stellar Content of Dwarf Spheroidals in the Galactic Halo", *ApJ*, 290, 191.
3. Aaronson, M., & Olszewski, E.W. 1987, "The Search for Dark Matter in Draco and Ursa Minor: A Three Year Progress Report", in *Dark Matter in the Universe*, IAU Symposium No. 117, edited by J. Kormendy and G.R. Knapp (Reidel, Dordrecht), p. 153
4. Aaronson, M., Olszewski, E.W., & Hodge, P.W. 1983, "Carbon Stars and the Seven Dwarfs", *ApJ*, 267, 274.
5. Armandroff, T.E., Olszewski, E.W., & Pryor, C. 1995, "The Mass-to-Light Ratios of the Draco and Ursa Minor Dwarf Spheroidal Galaxies. I. Radial Velocities from Multifiber Spectroscopy", *AJ*, 110, 2131.
6. Azzopardi, M., Lequeux, J., & Westerlund, B.E. 1986, "New Carbon Stars in Spheroidal Galaxies. II. Draco, Ursa Minor, and New Data on Sculptor, Carina, and Leo I", *A&A*, 161, 232.
7. Bell, R.A. 1985, "Abundances of Giant Stars in the Draco and Ursa Minor Dwarf Galaxies", *PASP*, 97, 219.
8. Bono, G., Caputo, F., Santolamazza, P., Cassisi, S., & Piersimoni, A. 1997, "Evolutionary Scenario for Metal-Poor Pulsating Stars. II. Anomalous Cepheids", *AJ*, 113, 2209.
9. Canterna, R., & Schommer, R.A. 1978, "The Chemical Abundances of Extreme Population II Systems", *ApJ*, 219, L119.
10. Cowley, A.P., Hartwick, F.D.A., & Sargent, W.L.W. 1978, "Spectra of Giant Stars in Distant Satellites of the Galaxy", *ApJ*, 220, 453.
11. Cudworth, K.M., Olszewski, E.W., & Schommer, R.A. 1986, "Proper Motions and Bright-Star Photometry in the Ursa Minor Dwarf Galaxy", *AJ*, 92, 766.
12. Demers, S., Battinelli, P., Irwin, M.J., & Kunkel, W.E. 1995, "A Search for Stellar Aggregates in Dwarf Spheroidal Galaxies", *MNRAS*, 274, 491.
13. Faber, S.M., & Lin, D.N.C. 1983, "Is there Nonluminous Matter in Dwarf Spheroidal Galaxies?", 266, L17.
14. Geisler, D., & Sarajedini, A. 1996, "Standards Giant Branches in the Washington System: Calibration and Application to the Draco, Ursa Minor, and Sextans Dwarf Spheroidal Galaxies", in *Formation of the Galactic Halo... Inside and Out*, edited by H. Morrison and A. Sarajedini (Astronomical Society of the Pacific, San Francisco), p. 524.
15. Gerhard, O.E., & Spergel, D.N. 1992, "Dwarf Spheroidal Galaxies and the Mass of the Neutrino", *ApJ*, 389, L9.
16. Hargreaves, J.C., Gilmore, G., Irwin, M.J., & Carter, D. 1994, "A Dynamical Study of the Ursa Minor Spheroidal Galaxy", *MNRAS*, 271, 693.
17. Hill, J.M., Olszewski, E.W., Lesser, M.P., Aaronson, M., & Eisenhamer, J.D. 1986, "New Member Giants in Dwarf Spheroidal Galaxies Using the MX Spectrometer", *BAAS*, 18, 996.
18. Hodge, P.W. 1966, "Distribution of Stars in the Ursa Minor Dwarf Galaxy", *AJ*, 69, 438.

19. Irwin, M., & Hatzidimitriou, D. 1995, "Structural Parameters for the Galactic Dwarf Spheroidals", *MNRAS*, 277, 1354.
20. Knapp, G.R., Kerr, F.J., & Bowers, P.F. 1978, "Upper Limits to the H I Content of the Dwarf Spheroidal Galaxies", *AJ*, 83, 360.
21. Lake, G. 1990, "The Distribution of Dark Matter in Draco and Ursa Minor", *MNRAS*, 244, 701.
22. Light, R.M. 1987, "Measurement of Abundances and their Variations in Dwarf Spheroidal Galaxies", *BAAS*, 19, 1033.
23. Lynden-Bell, D. 1982, "The Ursa Minor Dwarf Galaxy is a Member of the Magellanic Stream", *Observatory*, 102, 7.
24. Markert, T.H., & Donahue, M.E. 1985, "Observations of Four Nearby Galaxies with the *Einstein Observatory*", *ApJ*, 297, 564.
25. Nemec, J.M., Nemec, A.F.L., & Lutz, T.E. 1994, "Period-Luminosity-Metallicity Relations, Pulsation Modes, Absolute Magnitudes, and Distances for Population II Variable Stars", *AJ*, 108, 222.
26. Nemec, J.M., Wehlau, A., & Mendes de Oliveira, C. 1988, "Variable Stars in the Ursa Minor Dwarf Galaxy", *AJ*, 96, 528.
27. Norris, J., & Bessell, M.S. 1978, "Abundance Variations on the Giant Branches of the Sculptor and Ursa Minor Dwarf Spheroidal Galaxies and the ω Centauri Anomaly", *ApJ*, 225, L49.
28. Olszewski, E.W., & Aaronson, M. 1985, "The Ursa Minor Dwarf Galaxy: Still an Old Stellar System", *AJ*, 90, 2221.
29. Olszewski, E.W., Aaronson, M., & Hill, J.M. 1995, "Nine Seasons of Velocity Measurements in the Draco and Ursa Minor Dwarf Spheroidal Galaxies with the MMT Echelle", *AJ*, 110, 2120.
30. Olszewski, E.W., Pryor, C., & Armandroff, T.E. 1996, "The Mass-to-Light Ratios of the Draco and Ursa Minor Dwarf Spheroidal Galaxies. II. The Binary Population and its Effect on the Measured Velocity Dispersions of Dwarf Spheroidals", *AJ*, 111, 750.
31. Pryor, C., & Kormendy, J. 1990, "The Dark Matter Halos of Draco and Ursa Minor", *AJ*, 100, 127.
32. Schommer, R.A., Olszewski, E.W., & Cudworth, K.M. 1981, "The Ursa Minor Dwarf Galaxy", in *Astrophysical Parameters for Globular Clusters*, IAU Colloquium No. 68, edited by A.G.D. Philip and D.S. Hayes (L. Davis Press Inc., Schenectady), p. 453.
33. Schommer, R.A., Olszewski, E.W., & Kunkel, W.E. 1978, "A Preliminary Color-Magnitude Diagram for the Ursa Minor Dwarf Galaxy", in *The HR Diagram*, IAU Symposium, No. 80, edited by A.G.D. Philip and D.S. Hayes (Reidel, Dordrecht), p. 269.
34. Schweitzer, A.E., & Cudworth, K.M. 1996, "The Absolute Proper Motion of the Ursa Minor Dwarf Spheroidal Galaxy", *BAAS*, 28, 835.
35. Stetson, P.B. 1984, "Spectroscopy of Giant Stars in the Draco and Ursa Minor Dwarf Galaxies", *PASP*, 96, 128.
36. Strobel, N.V., & Lake, G. 1994, "Black Hole Models for the Dark Matter in Draco and Ursa Minor", *ApJ*, 424, L83.
37. Suntzeff, N.B., Olszewski, E., Kraft, R.P., Friel, E., Aaronson, M., & Cook, K. 1983, "The Ursa Minor Dwarf Galaxy", *BAAS*, 15, 907.
38. Swope, H.H. 1968, "Thirteen Periodic Variable Stars Brighter than the Normal RR Lyrae-Type Variables in Four Dwarf Galaxies", *AJ*, 73, S204.
39. van Agt, S. 1967, "A Discussion of the Ursa Minor Dwarf Galaxy Based on Plates Obtained by Walter Baade", *Bull. Astr. Inst. Neth.*, 19, 275.

40. van den Bergh, S. 1994, "The Evolutionary History of Low-Luminosity Local Group Dwarf Galaxies", *ApJ*, 428, 617.
41. Wilson, A.G. 1955, "Sculptor-Type Systems in the Local Group of Galaxies", *PASP*, 67, 27.
42. Zinn, R. 1981, "The Metal Abundance Range in the Ursa Minor Dwarf Galaxy", *ApJ*, 251, 52.

WLM

Alternate name(s): DDO 221

Right Ascension (2000): 00h 01m 58s

Declination (2000): -15d 27.8m

Type: dIrr

Apparent magnitude (V): 10.85

Color (B-V): 0.42

(U-B): -0.21

(V-R):

Color Excess, E(B-V): 0.02

Absolute magnitude (MV): -14.0

Distance (kpc): 925

Radial velocity (solar, km/sec): -123

Objects Identified On the Atlas:

Globular clusters: 1; designation: GC1

Source: [2]

Open clusters: none

Source:

OB associations: 4; designation: A

Source: [this atlas]

Variable stars: 33; designation: V

Source: [15]

Carbon stars: none

Source:

HII regions: 21; designation: Arabic numerals

Source: [6]

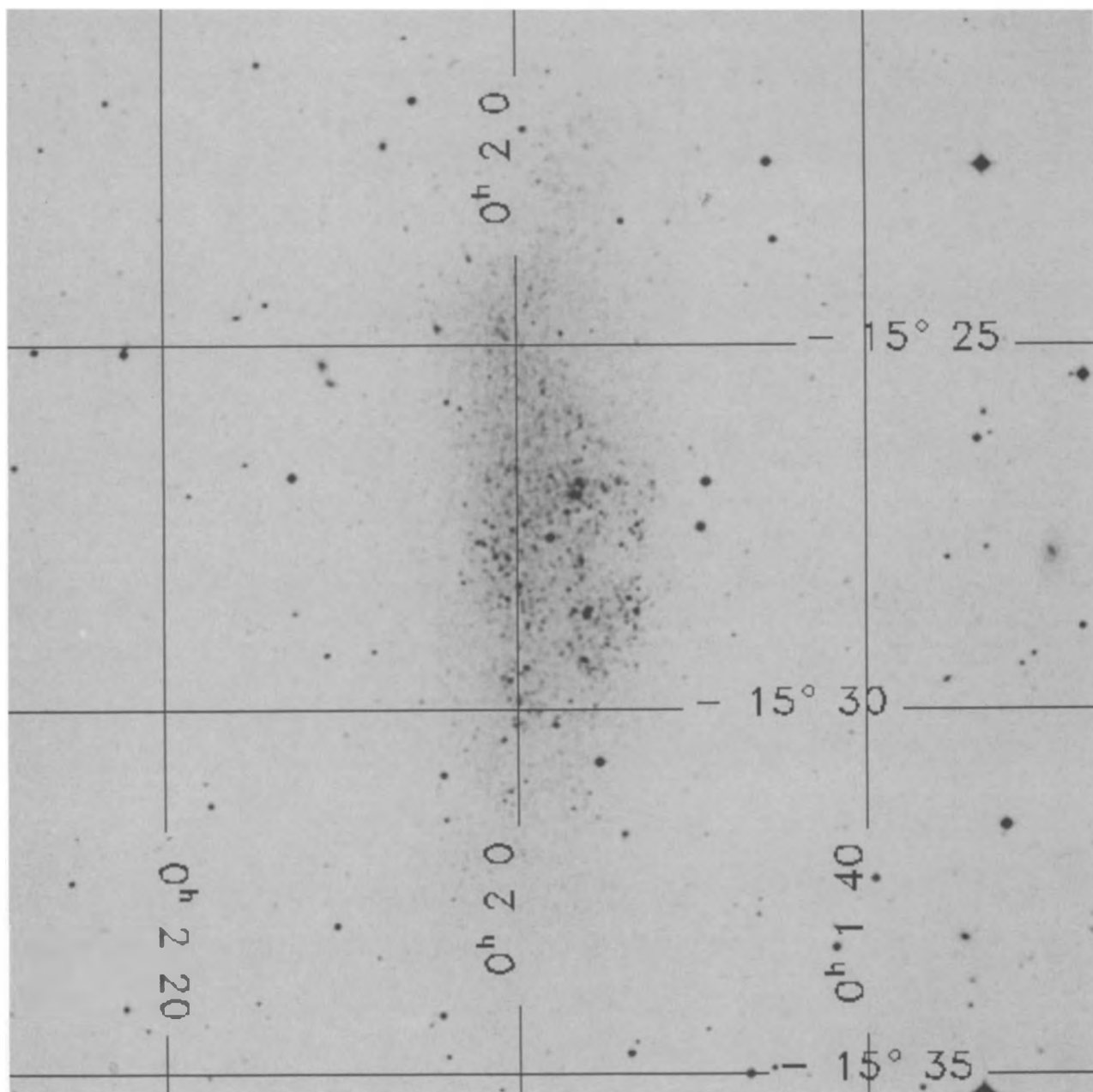
Planetary nebulae: none

Source:

Dust clouds: none

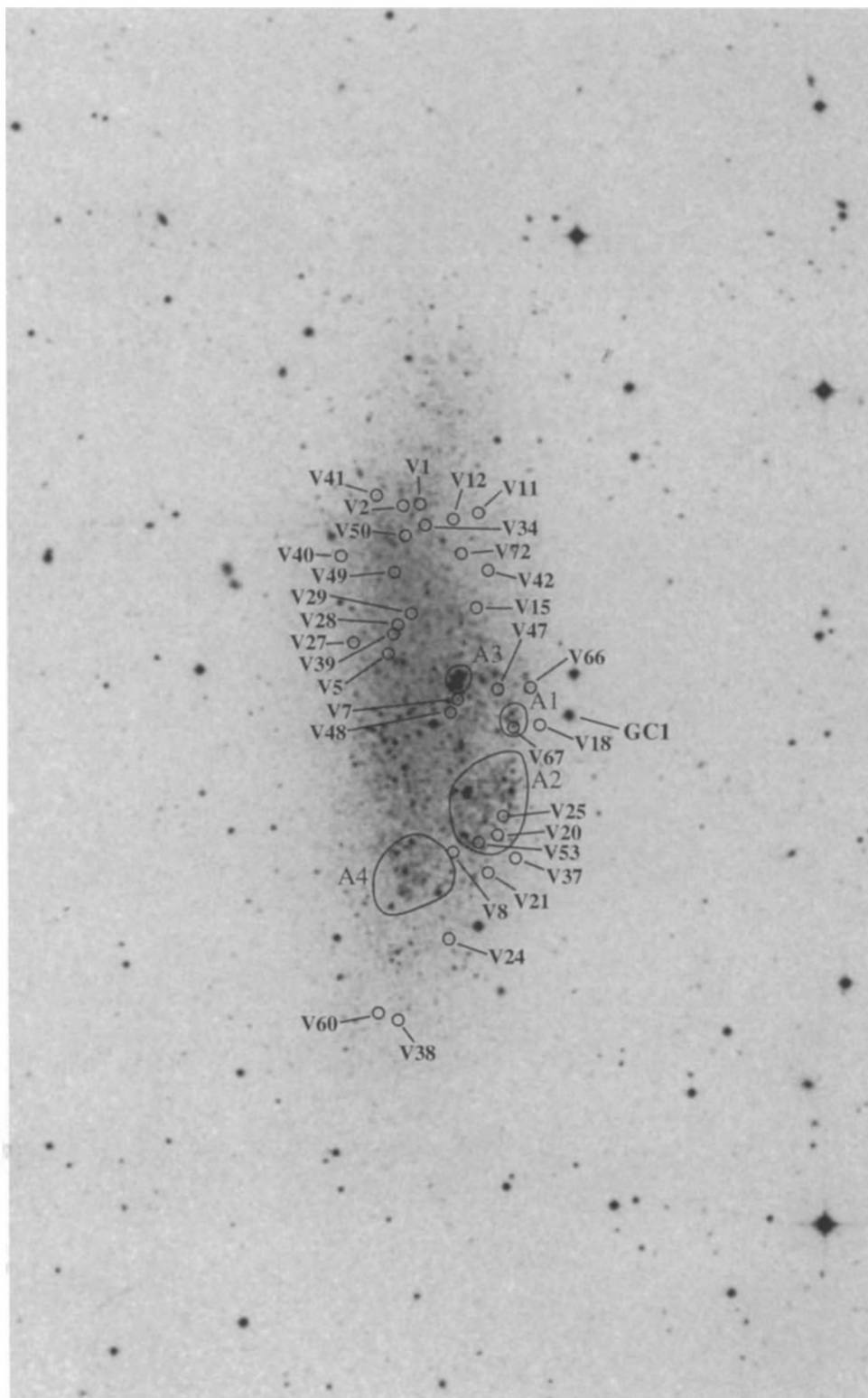
Source:

WLM
Chart 201



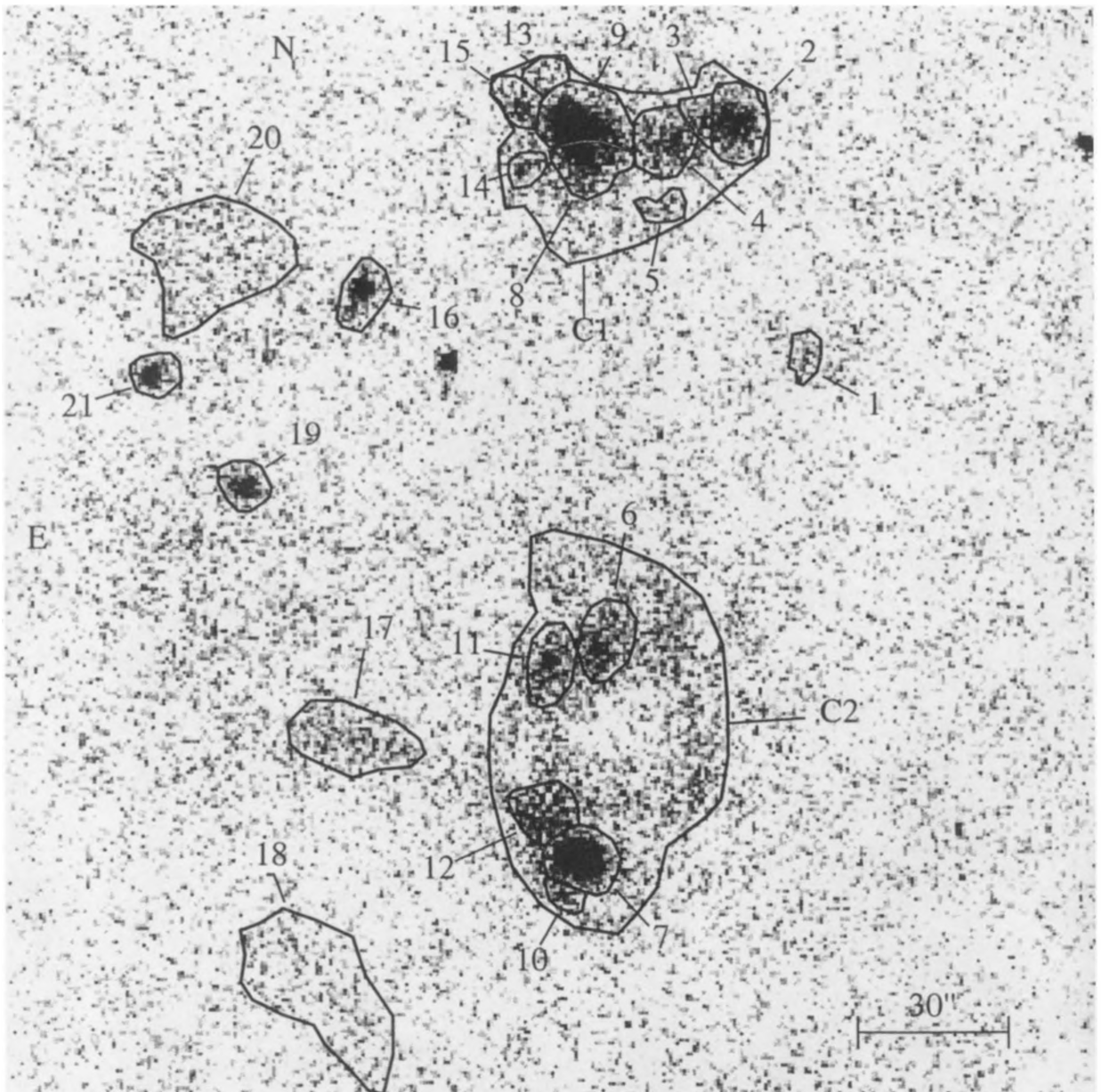
WLM

Chart 202



WLM

Chart 203



WLM

References

1. Aaronson, M., Cook, K.H., & Norris, J. 1985, "The AGB Population of Nearby Galaxies", in *Spectral Evolution of Galaxies*, edited by C. Chiosi and A. Renzini (Reidel, Dordrecht), p. 171.
2. Abies, H.D., & Abies, P.G. 1977, "*B, V* Photometry of the WLM Galaxy", *ApJS*, 34, 245.
3. Cook, K.H., Aaronson, M., & Norris, J. 1986, "Carbon and M Stars in Nearby Galaxies: A Preliminary Survey Using a Photometric Technique", *ApJ*, 305, 634.
4. Ferraro, F.R., Fusi Pecci, F., Tosi, M., & Buonanno, R. 1989, "A Method to Study the Star Formation History of Dwarf Irregular Galaxies. I. CCD Photometry of WLM", *MNRAS*, 241, 433.
5. Freedman, W.L. 1986, "Recent CCD Observations of Cepheids in Nearby Galaxies: A Progress Report", in *Galaxy Distances and Deviations from Universal Expansion*, edited by B.F. Madore and R.B. Tully (Reidel, Dordrecht), p. 21.
6. Hodge, P., & Miller, B.W. 1995, "H II Regions in Four Galaxies in and near the Local Group", *ApJ*, 451, 176.
7. Huchtmeier, W.K., Seiradakis, J.H., & Materne, J. 1981, "The Neutral Hydrogen Distribution of Irregular Galaxies", *A&A*, 102, 134.
8. Hunter, D.A., Hawley, W.N., & Gallagher, III, J.S. 1993, "A Survey for Extra- H II Region Ionized Gas Structures in Irregular Galaxies", *AJ*, 106, 1797.
9. Jacoby, G.H., & Lesser, M.P. 1981, "Distances to Nearby Galaxies Derived from Planetary Nebulae", *AJ*, 86, 185.
10. Lee, M.G., Freedman, W.L., & Madore, B.F. 1992, "I-band Cepheid Distance to WLM", presented at *New Perspectives on Stellar Pulsation and Pulsating Variable Stars*, IAU Colloquium 139.
11. Madore, B.F., & Freedman, W.L. 1991, "The Cepheid Distance Scale", *PASP*, 103, 933.
12. Minniti, D., & Zijlstra, A.A. 1997, "Stellar Populations of the Dwarf Irregular Galaxy WLM", *AJ*, 114, 147.
13. Minniti, D., & Zijlstra, A.A. 1996, "Dwarf Galaxies Also Have Stellar Halos", *ApJ*, 467, L13.
14. Mould, J., & Aaronson, M. 1986, "The Formation and Evolution of Carbon Stars", *ApJ*, 303, 10.
15. Sandage, A., & Carlson, G. 1985, "The Brightest Stars in Nearby Galaxies. VI. Cepheids and the Brightest Stars in WLM", *AJ*, 90, 1464.
16. Skillman, E.D., Terlevich, R., & Melnick, J. 1989, "Abundances in Southern Local Group Dwarf Irregular Galaxies", *MNRAS*, 240, 563.
17. Tosi, M., Greggio, L., & Focardi, P. 1989, "Star Formation in Dwarf Irregular Galaxies: Preliminary Results", *Ap&SS*, 156, 295.
18. Walker, A.R. 1987, "Notes on Cepheids Variables in Galaxies More Distant Than the Magellanic Clouds", *S. African Astron. Obs. Circ.*, 11, 125.

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Part III

Charts of four additional Local Group Members

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And V

Alternate name(s):

Right Ascension (2000): 01h 10m 17s

Decimation (2000): 47d 37m 41s

Type: dSph

Apparent magnitude (V):

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V):

Absolute magnitude (M_V): -9.1

Distance (kpc): 810

Radial velocity (solar):

Objects Identified On the Atlas:

Globular clusters:

Source:

Open clusters:

Source:

OB associations:

Source:

Variable stars:

Source:

Carbon stars:

Source:

HII regions:

Source:

Planetary nebulae:

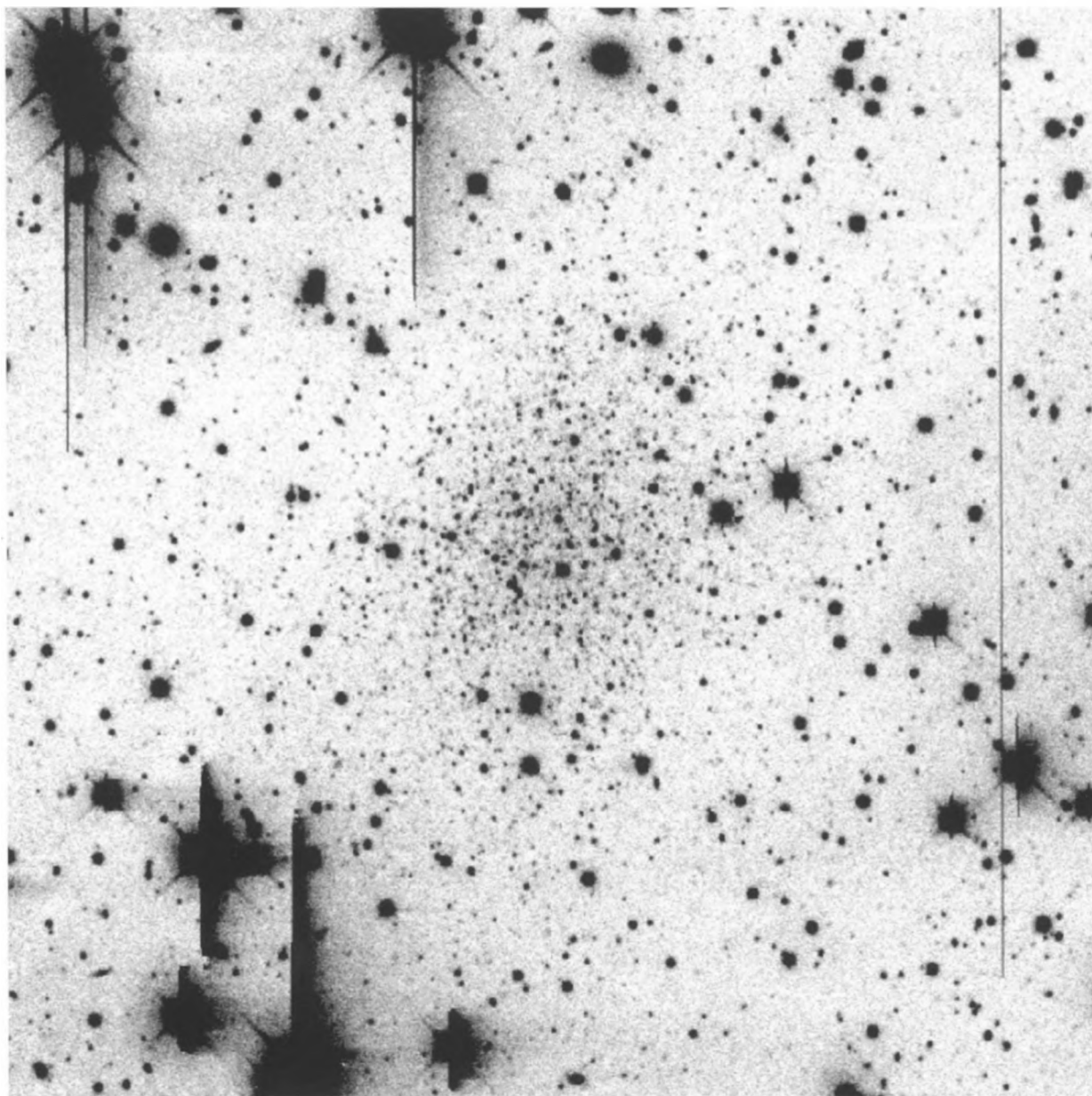
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Dust clouds:

Source:

And V

Chart 204



And VI

Alternate name(s): Pegasus

Right Ascension (2000): 23h 51m 39s

Declination (2000): 24d 35m 42s

Type: dSph

Apparent magnitude (V): 14.1

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V):

Absolute magnitude (M_V): -11.3

Distance (kpc): 780

Radial velocity (solar):

Objects Identified On the Atlas:

Globular clusters:

Source:

Open clusters:

Source:

OB associations:

Source:

Variable stars:

Source:

Carbon stars:

Source:

HII regions:

Source:

Planetary nebulae:

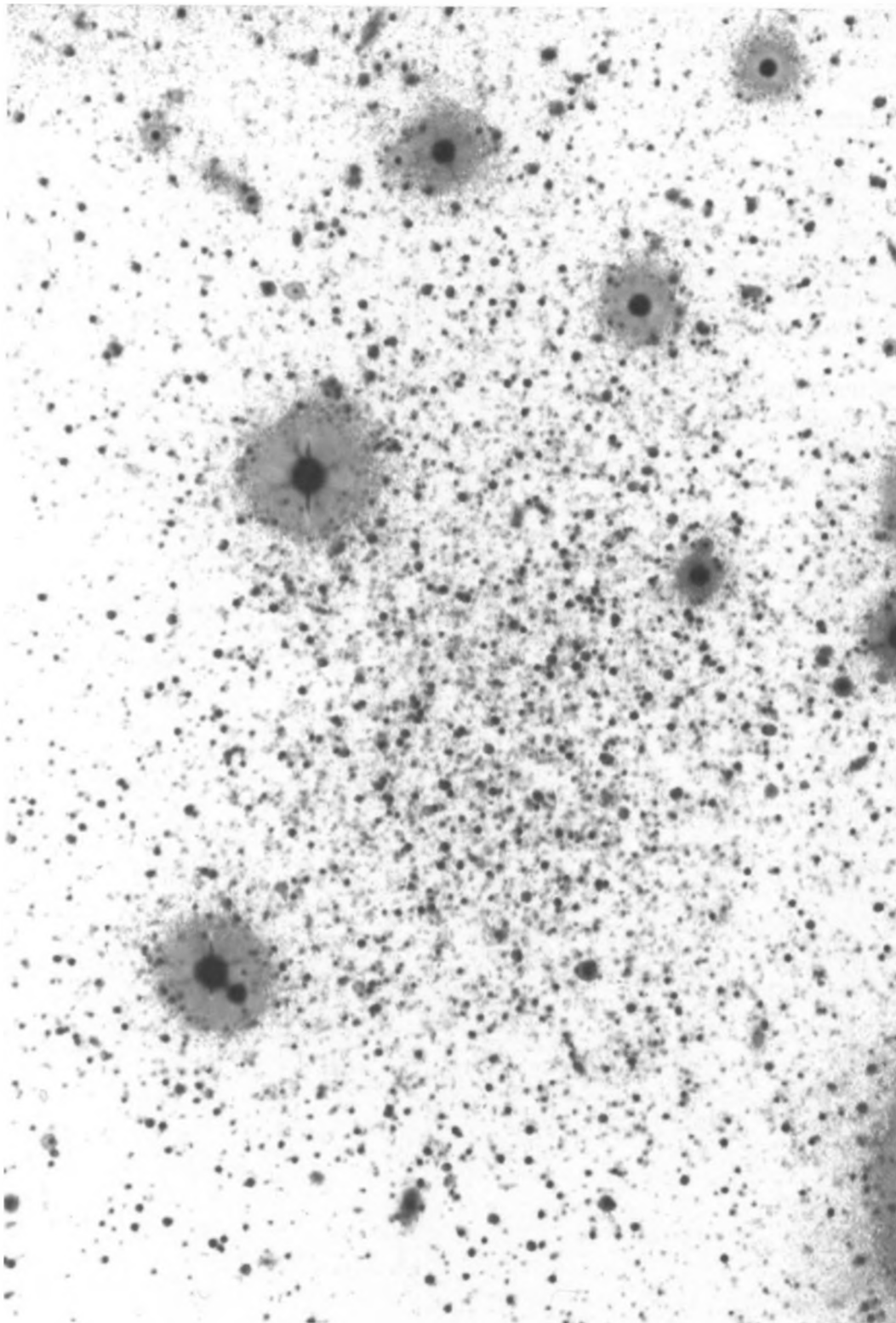
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Dust clouds:

Source:

And VI

Chart 205



And VII

Alternate name(s): Cassiopeia

Right Ascension (2000): 23h 26m 31s

Declination (2000): 50d 41m 31s

Type: dSph

Apparent magnitude (V):

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V):

Absolute magnitude (M_V): -12.0

Distance (kpc): 690

Radial velocity (solar):

Objects Identified On the Atlas:

Globular clusters:

Source:

Open clusters:

Source:

OB associations:

Source:

Variable stars:

Source:

Carbon stars:

Source:

HII regions:

Source:

Planetary nebulae:

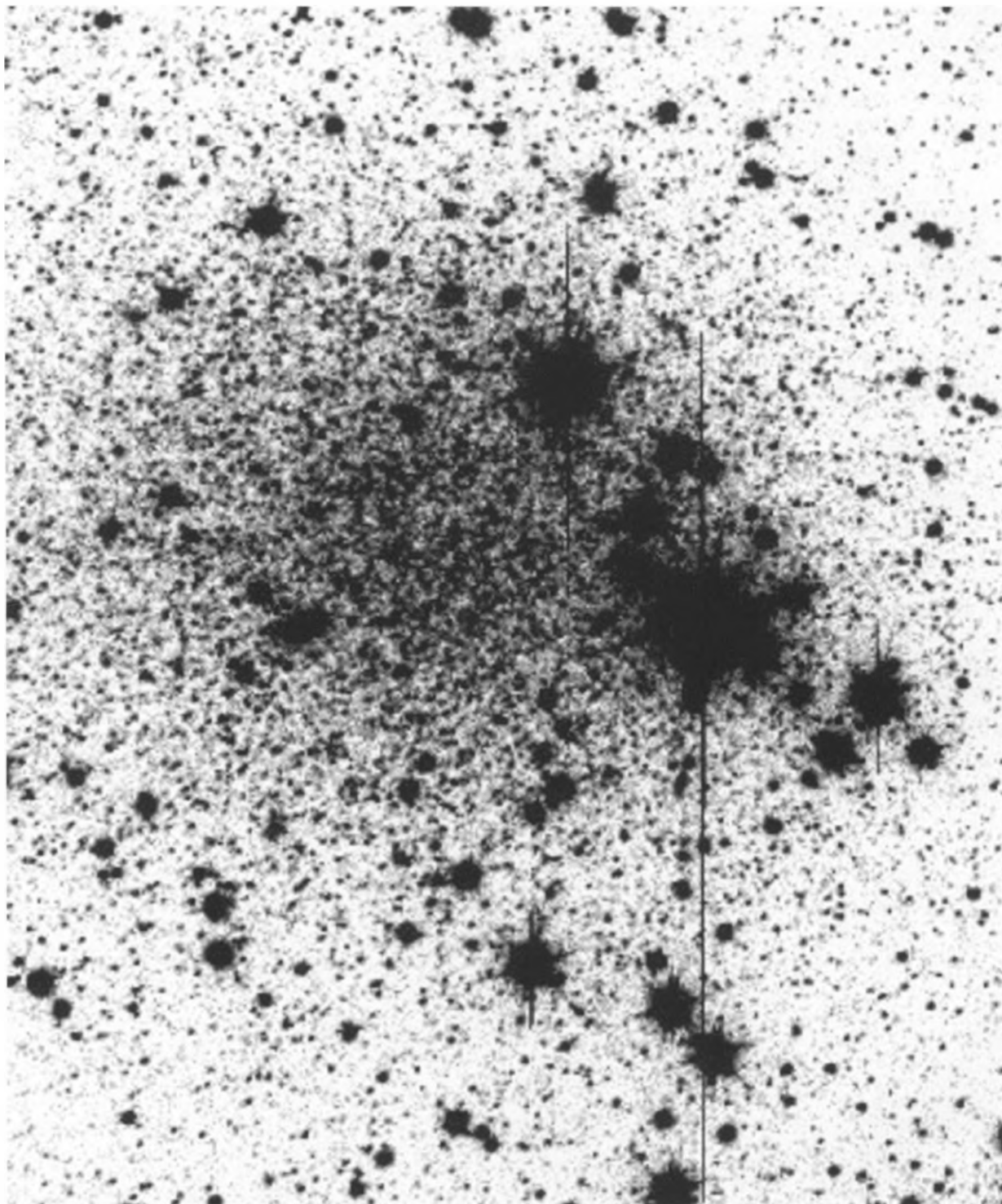
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Dust clouds:

Source:

And VII

Chart 206



Cetus

Alternate name(s):

Right Ascension (2000): 00h 26m 11s

Declination(2000): -11d 02m 40s

Type: dSph

Apparent magnitude (V): 14.4

Color (B-V):

(U-B):

(V-R):

Color Excess, E(B-V):

Absolute magnitude (M_V): -10.1

Distance (kpc): 775

Radial velocity (solar):

Objects Identified On the Atlas:

Globular clusters:

Source:

Open clusters:

Source:

OB associations:

Source:

Variable stars:

Source:

Carbon stars:

Source:

HII regions:

Source:

Planetary nebulae:

Source:

Dust clouds:

Source:

Cetus

Chart 207

